

Motor Age

Vol. II. No. 6

AUGUST 7, 1902

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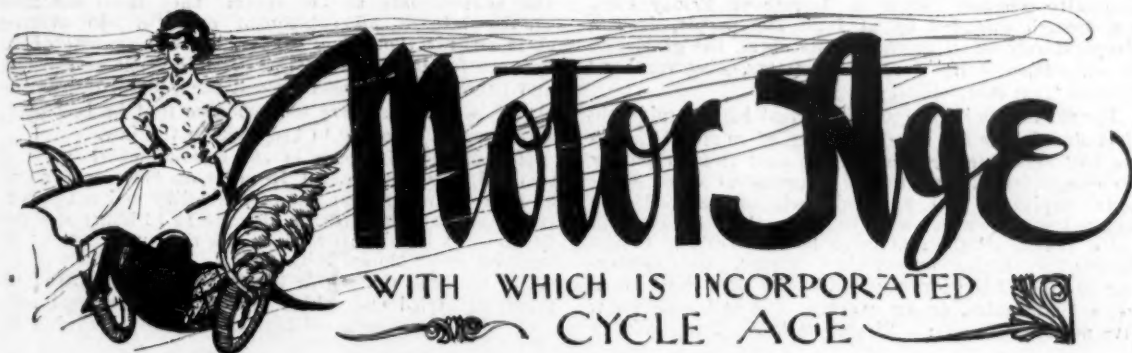
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Motor Age

WITH WHICH IS INCORPORATED
CYCLE AGE

VOL. II. No. 6.

CHICAGO, AUGUST 7, 1902.

\$2.00 PER YEAR



The first 100-mile endurance run promoted by the Chicago Automobile Club passed into history on Saturday night. It had been once postponed on account of stress of weather and the abominable condition of the road, but until Thursday night it appeared extremely probable that there would be no improvement as a result of the delay. Four members of the club went over the course Thursday and were stopped before they were outside of the city limits by a drenching rainstorm lasting nearly 2 hours. The roads were, in some places, good, but in others, as stated in the club's literature, "very, very bad." The fates were propitious, however, and after 2 days of sunshine the roads had dried out on Saturday so that the competitors who had heard Friday evening's report of the condition of the course were, on the whole, agreeably surprised at its condition.

Preparations for the event commenced not less than 4 months ago. A special committee was appointed, consisting of R. H. Croninger, chairman; Edwin F. Brown and J. B. Burdett. It is no exaggeration to say that at least 90 per cent of all the work in connection

with the event fell to the lot of the chairman, who carried it through to the satisfaction of every one and with abundant credit to himself. He made an examination of all the courses available around about Chicago, consulted the promoters of eastern contests, formulated the rules and, after the course had been finally adopted, made no less than nine trips over it, the last one last Thursday.

It cannot be said with truth that the members of the club gave to the event the support which its importance and Mr. Croninger's efforts deserved. Of the thirty-nine entrants less than a dozen were members of the club, and only nine started. Only one—fortunately one of the hardest workers for the success of the run—scored the highest possible average. Nor were the members desirous, apparently, of rendering assistance either in the preliminary arrangements or on the day of the event, for the names of only two are to be found on the list of observers, while the bulk of the work at the start and finish, and in connection with the judging, fell upon men selected by the referee at the last moment, and whose names did not figure among the officials

originally selected. Even the lecture on Friday evening, though attended by at least 200 people, drew a comparatively small number of members, the gentlemen in attendance being largely operators, observers and visitors from other cities.

The committee in charge of the event had set midnight of Wednesday as the time of closing of entries. Thirty-two had sent in their names up to that time, but later the committee yielded to the requests of seven additional aspirants and accepted their entries. Of the thirty-nine, four were steam vehicles—three Locomobiles and a White, all the remainder being gasoline. Of the thirty-nine entries twenty-nine started, and twenty-four completed the journey within the time limit of 12 hours 30 minutes, or an average of 8 miles an hour. Five machines to wit: a Pierce, Packard, Knox, Winton

and that if late at one control they must continue equally late at all subsequent controls. In making their awards the judges made a certain amount of allowance for ignorance of the exact location of controls and other circumstances beyond the control of the operator, so long as there was evidence that he had made a reasonable endeavor to keep within the law.

It made no difference in the awards whether a car traveled at an average of 15 miles an hour or 8 miles an hour. The test was one of reliability and not speed, and a man who covered the distance in 12 hours was entitled to as high an award as the man who covered it in 8, all other things being equal.

For marking the course the club adopted a plan not previously tried and which proved an unqualified success. Of course the usual arrows were employed, but in



and an Oldsmobile, made absolutely non-stop runs. One car, a Winton, made one unpenalized stop. One penalized stop was made by an Autocar, an Olds and a Murray. Two penalized stops were made by a Winton, an Olds, three Ramblers (one of these is doubtful and is under investigation), a Northern and a Murray. The stops of other cars ranged from three to ten.

The committee had established the strictest possible regulations to prevent excessive speed, not only for the entire journey but between controls. Timers were stationed at each control and competitors were warned that should they arrive at a control ahead of time disqualification would result. They were instructed that should a stop occur the time lost must not be regained,

in addition to this cut paper, sometimes erroneously called confetti, similar to that used by cross-country running clubs in their paper chases, was used. This was dropped at all turns of the roads so that there was little or no complaint about inability to follow the course. This plan was particularly valuable in the towns and in passing through the reservation at Fort Sheridan, where signs were not allowed or had been torn down by the obliging small boy.

No penalty was imposed for tire troubles, stoppages by the police, to avoid frightening horses, to render aid in case of accident, impassable railroad crossings, road blocked or demands of nature. Operators were permitted to stop their motors while repairing tires, or to pre-

vent frightening horses, but no attention might be given to machines during stops from any cause above enumerated.

The observers were selected by lot, this, by the way, being one detail which was left a little too late, result-

Gasoline Consumption

The fuel consumption of the cars which completed the journey is here given. For cost per mile, see table elsewhere:

	Gals.	Qts.	Pts.		Gals.	Qts.	Pts.
Pierce	3	1	.	Murray	6	.	.
Olds	3	2	.	Winton	6	2	.
Rambler	3	3	1½	Packard	6	3	.
Olds	4	.	1	Winton	6	3	.
Northern	4	1	.	Darracq	6	3	.
Rambler	4	1	.	Winton	7	1	.
Rambler	4	2	1½	Knox	7	3	.
Olds	4	3	.	Winton	7	3	.
Murray	4	3	1	Friedman	9	1	.
Autocar	5	3	.	Locomobile	9	3	1
				Winton	10	3	.

Causes of Stoppage

Stoppages reported by observers were due to the following troubles:

Tire deflation	4	Water	14
Ignition	6	Stopped by traffic	2
Broken belt	3	Lubrication	1
Hot engine	2	To render assistance	3
Timid horse	1	For gasoline	5
Broken gasoline connection	1	Fire	1
Arrest	1	Water connection broken	1
Steering rod broken	1	Valve stuck	1
Air (steam carriage)	3	Miscellaneous	2

Following is a report of the performance of each car, as related by the official observers:

No. 1. Winton touring car. Operator, Frank X. Mudd; observer, J. B. Burdett. Position at start, first; at finish, first. One stop at State and Jackson streets through traffic blockade; in all other respects a practically perfect record. Time, 7:16:35. Judges award, blue ribbon, 100 per cent.

No. 2. Winton touring car. Operator, John E. Fry; observer, R. E. Welles. Position at start, second; at finish, second. Made two stops, one of 26 minutes and



Frank X. Mudd, Mrs. Mudd and Mrs. Croninger in a Winton

ing in a delay of 6 minutes in starting the first man. Each observer drew a number and proceeded to the car of the corresponding number, having no intimation of the car in which he would ride until a few moments before the start.

Blue Ribbon Winners, 100 Per Cent

To secure the highest possible award, it was necessary that a machine travel the 100 miles without a penalized stop. Stops were permitted under certain unavoidable conditions set forth elsewhere, none of which could be attributed to any failure of the machine. It was necessary to make the journey at an average speed of between 8 and 15 miles an hour, without exceeding the legal limit of speed of 15 miles an hour at any stage of the event.

Percy P. Pierce, no stops; time	8:01:40
C. S. Mason, Knox, no stops; time	7:14:05
Fred J. Pardee, Packard, no stops; time	7:15:47
John Farson, Jr., Winton; no stops; time	7:15:05
M. Wiggs, Olds, no stops; time	8:02:50
Frank X. Mudd, Winton, no stops; time	7:16:35
C. A. Benjamin, Locomobile, no stops; time	8:01:45
Roy D. Chaplin, Olds, no stops; time	8:02:39
S. B. Arnold, Locomobile, no stops; time	11:30:20

Red Ribbon Winners, 99 Per Cent

To win this ribbon it was necessary to cover the course with stops aggregating not more than 5 minutes.

F. J. Illsley, Autocar, one stop; time	7:15:40
Arthur Gardener, Rambler, two stops; time	7:13:15
R. R. Brown, Friedman, one stop; time	7:59:32
J. D. Maxwell, Northern, one stop; time	7:53:30

Red Ribbon Winners, 98 Per Cent

To win this ribbon it was necessary to cover the course with stops aggregating not more than 10 minutes.

S. F. Symons, Rambler, two stops; time	7:17:10
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Yellow Ribbon Winners, 97 Per Cent

To win this ribbon it was necessary to cover the course with stops aggregating not more than 15 minutes.

C. T. Jeffery, Rambler, two stops; time	7:11:10
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Bridge Between Wheeling and Libertyville.

one of 5 minutes duration, due in each case to breakage of contact spring. This machine was on time at all controls despite stoppages and was accordingly disqualified. Time, 7:15:36. No award.

No. 4. Autocar. Operator, J. F. Illsley; observer, R. W. Harrold. Position at start, third; at finish, third. This machine was on time to the minute at each of the six controls and was only 40 seconds behind the minimum time at the finish. It made a perfect record except that between the fourth and fifth control a stop was made to close a drip-cock in the cir-

culating coil which had jolted open. Time, 7:15:40. Judges' award, red ribbon, 99 per cent.

No. 6. Oldsmobile. Operator, Roy D. Chapin; observer, J. W. Scott. Position at start, fourth; at finish, thirteenth. No penalized stops, but stopped on three occasions to repair punctured tire, the trouble being with the same tire in each case. Close observance of the rules is shown by the fact that the machine passed each of the first three controls on time, but lost sufficient time between the third and fourth and fourth and fifth controls to cover the time lost by repairs. Time, 8:02:30. Award, blue ribbon, 100 per cent.

No. 7. Oldsmobile. Operator, E. A. Brown; observer, C. M. Wheeler. Position at start, seventh; at finish, twenty-second. Made two stops, one of which was penalized; it was due to the breakage of a gasoline connection, the repair of which occupied 2 hours and 55 minutes. Time, 9:36. No award on account of length of stop for repairs.

No. 9. Pierce motorette. Operator, Percy P. Pierce; observer, B. C. Hamilton. Position at start, fifth; at finish, fourteenth. No stops or other difficulties. A perfect performance throughout. Time, 8:01:40. Award, blue ribbon, 100 per cent.

No. 13. Packard touring car. Operator, Fred J. Pardee; observer, W. H. Kirkpatrick. Position at start, twelfth; at finish, sixth. A perfect performance, except that a little lost time was regained between the second and third and the fifth and sixth controls. Time, 7:15:47. Award, blue ribbon, 100 per cent.

No. 14. Rambler. Operator, Arthur Gardener; observer, E. A. Wright. Position at start, sixth; at finish, fourth. The record at controls was practically perfect; the observer reported two stops, one of 5 seconds, due to the displacement of the switch, and the second of 10 seconds in changing from one battery to another. It was the understanding of Mr. Jeffery who entered the machine, that although the engine stopped, the occurrence took place on a hill and that the machine

was made at 2:12. Except that the time lost through the arrest was made up before the next control was reached, contrary to the rules of the event, the record at the controls was practically perfect. Time, 7:17:10. Award, red ribbon, 98 per cent.

No. 16. Rambler. Operator, C. T. Jeffery; observer, T. I. Stacey. Position at start, twenty-fifth; at finish,



Desplaines River and Road at Wheeling.

eighth. The engine stopped, cause not stated, just before the machine reached the fourth control, causing a delay of 1 minute and 30 seconds. Between the fifth and sixth controls the transmission stuck causing delay of 22 minutes. Time, 7:11:10. Award, yellow ribbon, 97 per cent.

No. 18. Knox. Operator, C. F. Mason; observer, R. B. Holt. Position at start, eighth; at finish, fifth. No stops or other difficulties. According to the observer's record the time of all controls except the sixth, where the car was one minute ahead, was perfect. The car finished 55 seconds inside of the time prescribed by the rules, having therefore exceeded the speed limit to the extent of 1 minute and 55 seconds between the sixth control and the finish. This incident was the dividing line between this machine and the Pierce in the award of the cup. Time, 7:14:05. Award, blue ribbon, 100 per cent.

No. 19. Locomobile. Operator, S. B. Arnold, a boy of thirteen; observer, J. A. Dixon. Position at start, business. He was arrested at 2:05 and started again at 2:08, having argued his case and paid a five dollar ninth; at finish, twenty-third. Made ten stops, none of which were penalized. Time, 11:30. Award, blue ribbon, 100 per cent.

No. 24. Winton touring car. Operator, C. E. Bartley; observer, W. R. Smith. Position at start, sixteenth; at finish, eleventh. Made three stops, due in each case to a broken belt. The aggregate of stops was 33 minutes. Time, 7:23:55. Award, white ribbon, 93 per cent.

No. 27. Oldsmobile. Operator, M. E. Haywood; observer, C. H. Waehs, Jr. Position at start, seventeenth; at finish, twenty-first. One stop for water of 33 minutes' duration. Time, 8:47:45. Award, white ribbon, 93 per cent.

No. 28. Northern. Operator, J. D. Maxwell; observer, V. L. Bowman. Position at start, fourteenth; at finish, fifteenth. Made 2 stops, one unpenalized, on account of a deflated tire, and the second of 2 minutes to lubricate a valve which, fitting too tightly, stuck. Aside from these incidents the controls were reached



Grand Avenue Bridge at Desplaines River, First Control.

did not come to a stand still. The incident is being investigated by the judges. Time, 7:13:15. Award, red ribbon, 99 per cent.

No. 15. Rambler. Operator, S. F. Symons; observer, J. C. Mason. Position at start, twenty-first; at finish, tenth. This operator furnished a splendid example of the speed with which north shore authorities transact fine inside of 3 minutes. Another stop of 5 minutes

on time. Time, 7:53:30. Award, red ribbon, 99 per cent.
 No. 29. Darracq. Operator, A. C. Banker; observer, James Levy. Position at start, eighteenth; at finish, twelfth. Made eight stops, four of which were not penalized. Two stops, one of 30 seconds and one of 2 minutes are ascribed to battery troubles without further detail. On another occasion a water connection broke, entailing a loss of 9 minutes, and the last stop was due to exhaustion of gasoline supply. Time, 7:35:53. No award.

No. 30. Winton. Operator, Dr. F. H. Davis; observer, L. E. Brookes. Position at start, nineteenth; at finish, eighteenth. Made five stops, aggregating 34 minutes, each time for water. Time, 8:05:58. No award.

No. 31. Locomobile. Operator, C. A. Benjamin; observer, L. F. McCloud. Position at start, fifteenth; at finish, sixteenth. Made two stops, aggregating 36 minutes, the first for water and the second for water and gasoline; neither penalized under the rule. Time, 8:01:45. Award, blue ribbon, 100 per cent.

No. 32. Winton touring car. Operator, John Farson, Jr.; observer, H. J. Ullman. Position at start, twentieth; at finish, seventh. Except that the machine was slightly ahead of time at the first three controls, the record was practically perfect. Time, 7:15:05. Award, blue ribbon, 100 per cent.

No. 33. Murray. Operator, J. H. Mears; observer, W. B. Canis. Position at start, twenty-second; at finish, twentieth. Made one stop of 50 minutes, due to a break in the connecting rod between the steering post and the steering knuckle. In all other respects a perfect record. Time, 9:11. Award, 90 per cent, very highly commended.

No. 34. Murray. Operator, W. G. Murray; observer, J. W. Snider. Position at start, twenty-third; at finish, ninth. Made one unpenalized stop, due to the traffic on State street, and one penalized stop for gasoline. Except that the speed limit was very slightly exceeded between the fifth and sixth controls and the sixth control and the finish, the record at controls was perfect. Time, 7:15. No award.

No. 35. Friedman. Operator, R. R. Brown; observer, E. L. Dunn. Position at start, twenty-fourth; at finish, seventeenth. The record at all controls was perfect and no stops were made until about 200 yards from the finish, when in stopping suddenly to avoid a wagon which turned from a side street in front of him the operator stopped his engine, causing a delay of one minute. Time, 7:59:32. Award, red ribbon, 99 per cent.

No. 38. Oldsmobile. Operator, M. Wiggles; observer, W. J. Crawford. Position at start, twenty-sixth; at finish, nineteenth. The record at all controls was perfect and the machine made no stops for any cause whatsoever. Time, 8:02:50. Award, blue ribbon, 100 per cent.

It was announced for the first time at Friday evening's meeting that two silver cups would be given for the best performances, one to be confined to club members, and the other to a contestant outside the club. The first of these was awarded to Percy P. Pierce, whose record was without a flaw. The club cup was awarded to Frank X. Mudd, a popular victory, for Mudd has been one of the few workers whose efforts were responsible for the success of the event.

The experience possessed by Percy P. Pierce in earlier contests proved a valuable asset. Mr. Pierce has a record which is unapproached by any other operator, having taken part in every contest east and west in this country and having scored 100 per cent without a break. The machine he is now using has been run about 4,500 miles, and he states that it has covered 1,000 miles since it was last in the factory to be overhauled. In Saturday's contest Mr. Pierce jogged along steadily without making the slightest attempt at unnecessary speed. He passed the controls sufficiently behind the speed limit to be certain of his ground and fell a minute or so further behind at each. His record was considered by the judges the only perfect exposition of reliability of machine and judgment of the operator in the contest.

Jeffery Scores Kenosha Paper.

Some of the Chicago papers contained, on Monday, an item to the effect that "the Kenosha drivers" were exceedingly angry at the decision of the judges in the Chicago contest. The item was probably supplied by a gentleman connected with the Kenosha Evening News, which contained an attack on the officials, in consequence of which the following letters have been written:

Kenosha, Wis., Aug. 5.—Editor Kenosha Evening News: We notice in your issue of the 4th inst. an article headed "Entered a Protest," and as it was a mass of misstatements, we beg to correct it, and to ask you to give this refutation equal prominence with your article of yesterday.

1. We have filed no protest against the judges' awards.
2. The Kenosha chauffeurs were not jockeyed in any particular.
3. The arrest of Mr. Symmonds showed no "favoritism"



EARLY MORNING AT THE CLUB HOUSE

on the part of the Chicago Automobile Club; merely ignorance of the Highland Park officials.

4. Mr. Chas. T. Jeffery was not deeply "penalized" for passing one of his controls in advance of the time allowed.

5. The contest was not a failure; it was exactly the opposite, a great success.

6. Owners of motor carriages living out of Chicago had exactly the same opportunity of winning as those operated by owners living in Chicago.

7. It was not a race in any sense of the word, since carriages finishing in twelve and a half hours received an equal rating to the Rambler, all of which finished within 5 minutes of the minimum time allowance of 7 hours and

Records of Gasoline Machines

No.	NAME.	Rated Horse Power.	Weight of Vehicle in lbs.	No. of Cylinders.	Bore and Stroke.	Normal Speed of Motor.	No. of Passengers.	Cost of Gasoline per Passenger at 12c. per gal.	Gasoline Consumption in gallons per mile.	Horse Power per 100 lbs. of Dead Load.
1	Winton	15	1950	5	x6	700	0.40	0.65	0.76	
2	Winton	15	1950	5	x6	700	0.64	108	0.76	
4	Autocar	8 1/2	1425	4	x4 1/2	1400	0.17	0.58	0.59	
6	Oldsmobile	4	800	1	4x6	.....	0.21	0.95	0.50	
7	Oldsmobile	4	800	1	4x6	.....	.....	.....	0.50	
9	Pierce Motoret' Packhard	3 1/2	800	1	3 1/2 x 3 1/2	1600	0.20	0.33	0.44	
13	Rambler	4 1/2	1200	1	4 1/2 x 6	600	0.23	0.39	0.38	
14	Rambler	4 1/2	1200	1	4 1/2 x 6	600	0.26	0.43	0.38	
15	Rambler	4 1/2	1200	1	4 1/2 x 6	600	0.28	0.47	0.38	
16	Rambler	4 1/2	1200	1	4 1/2 x 6	600	0.28	0.47	0.38	
18	Knoxmobile	6	1400	12	3 1/2 x 3 1/2	.....	0.47	0.78	0.43	
24	Winton	8 1/2	1800	1	5 1/2 x 6	700	0.22	0.72	0.47	
27	Oldsmobile	4	800	1	4 1/2 x 6	.....	0.29	0.48	0.45	
28	Northern	5	1000	1	4 1/2 x 6	700	0.25	0.42	0.50	
29	Darracq	9	1250	1	4 1/2 x 6	.....	0.41	0.68	0.72	
30	Winton	8 1/2	1900	1	5 1/2 x 6	700	0.41	0.68	0.45	
32	Winton	15	1950	5	5 1/2 x 6	700	0.23	0.78	0.76	
33	Murray	4	900	1	4 1/2 x 7	450	0.36	0.60	0.44	
34	Murray	4	900	1	4 1/2 x 7	450	0.29	0.48	0.44	
35	Friedman	6	950	12	3 1/2 x 4 1/2	600	0.57	0.83	0.63	
38	Oldsmobile	4	800	1	4 1/2 x 6	.....	0.25	0.41	0.50	

Records of Steam Machines

No.	NAME.	Rated Horse Power.	Weight of Vehicle in lbs.	No. of Cylinders.	Bore and Stroke.	Normal Speed of Motor.	No. of Passengers.	Cost of Gasoline per Passenger at 12c. per gal.	Gasoline Consumption in gallons per mile.	Horse Power per 100 lbs. of Dead Load.
19	Locomobile.....	3 1/2	750	12 1/2	2 1/2 x 4	.....	12 1/2	0.72	.120	0.43
31	Locomobile.....	3 1/2	750	12 1/2	2 1/2 x 3 1/2	.....	12 1/2	0.60	.090	0.43

15 minutes. It was a contest of endurance governed by rules with which every operator was familiar.

The article casts an implied reflection upon the officers and members of the Chicago Automobile Club, who are gentlemen of the highest standing, and give their time voluntarily and disinterestedly to the furtherance of automobilism, and it seems to us that before publishing such ridiculous and erroneous statements, that it would be advisable for your reporter to verify the alleged facts, which he could have done at no financial cost and with little expense of time, by communicating with us.—Yours, etc., Thomas B. Jeffery & Co. G. W. Bennett, sales manager.

Kenosha, Wis., Aug. 5.—M. W. T. Marlatt, Kenosha, Wis.—Dear Sir: We understand that you are the Kenosha correspondent for the Chicago Tribune and the Chicago Record-Herald, and are the author of the paragraphs which appeared in those papers on Sunday relative to a protest being filed by us. It seems to us that before circulating any such nonsense that it would be at least your duty to find out if the reports were true, which you could have easily done by communicating with us. We have many friends in the Chicago Automobile Club and the officials connected with the contest on Saturday last, whose reputations are beyond reproach, and these paragraphs coming from our town, have put us in an extremely unpleasant position. We would suggest that in future before making any such sensational and erroneous reports that you communicate with us by telephone or otherwise in order to obtain verification before promulgating.—Yours very truly, Thomas B. Jeffery & Co. G. W. Bennett, sales manager.

Description of Gasoline Machines and the Awards

No.	OPERATOR	OBSERVER	MANUFACTURER	Capacity in Gals.		Tires		Time Occ'ied on Trip	AWARDS
				Water	Gasoline	Make	Size		
1	Frank X. Mudd	J. B. Burdett	Winton Motor Co. Co.	8 1/2	10	Goodrich	4	7-16-35	Blue Ribbon
2	John E. Fry	R. A. Welles	" " "	8 1/2	10	"	4	7-15-36	None
4	F. Iilsley	E. W. Harroun	Autocar Co.	4	10	Dunlop	3 1/2	7-15-40	Red Ribbon
6	Roy D. Chapin	J. W. Scott	Olds Motor Works	4	4	Diamond	2 1/2	8-02-39	Blue Ribbon
7	E. A. Brown	C. M. Wheeler	" " "	4	4	"	2 1/2	9-36-00	None
9	P. F. Pierce	B. C. Hamilton	Geo. N. Pierce Co.	6	4 1/2	G. & J.	3	8-01-40	Blue Ribbon
13	A. Gardener	W. H. Kirkpatrick	Ohio Automobile Co.	3	6	"	2 1/2	7-15-47	Blue Ribbon
14	S. F. Symons	J. C. Mason	Thos. B. Jeffery & Co.	3	6	Diamond	2 1/2	7-13-15	Red Ribbon
15	C. T. Jeffery	T. I. Stacey	" " "	3	6	"	2 1/2	7-17-10	Red Ribbon
16	C. S. Mason	R. B. Holt	" " "	3	6	"	2 1/2	7-11-10	Yellow Rib'n
18	C. E. Bartley	W. R. Smith	Knox Automobile Co.	0	9	Dunlop	3	7-14-05	Blue Ribbon
24	M. E. Haywood	C. H. Waehs	Winton Motor Co. Co.	10	9	Goodrich	4	7-23-55	White Ribbon
27	J. D. Maxwell	V. L. Howman	Olds Motor Works	4	4	Diamond	2 1/2	8-47-45	White Ribbon
28	A. C. Banker	Jas. Levy	Northern Mfg. Co.	7	7 1/2	Dunlop	2 1/2	7-53-30	Red Ribbon
29	Dr. F. H. Davis	L. E. Brookes	A. Darracq & Co.	3	4 1/2	Michelin	3 1/2	7-35-53	None
30	J. Farson Jr.	H. J. Ullman	Winton Motor Co. Co.	8	9	Diamond	4	8-05-58	None
32	J. H. Mears	W. B. Canis	Winton Motor Co. Co.	8	10	"	4	7-15-06	Blue Ribbon
34	W. G. Murray	J. W. Snider	Church Mfg. Co.	4	4	"	2 1/2	9-11-00	V. H. C.
35	R. E. Brown	E. L. Dunn	" " "	4	4	"	2 1/2	7-15-00	None
36	M. Wigles	W. J. Crawford	Friedman Co.	6	10	"	3	7-59-32	Red Ribbon
38			Olds Motor Works	4	4	Diamond	2 1/2	8-02-50	Blue Ribbon

Description of Steam Machines and the Awards.

No.	OPERATOR	OBSERVER	MANUFACTURER	Capacity in Gals.		Tires		Time Occ'ied on Trip	AWARDS
				Water	Gasoline	Make	Size		
19	S. B. Arnold	J. A. Dixon	Locomobile Co.	24	9 1/2	International	2 1/2	11-30-20	Blue Ribbon
31	C. A. Benjamin	L. F. McClond	Locomobile Co.	22	4 1/2		2 1/2	8-01-45	Blue Ribbon



Grease or Oil in Transmission Case.

Cleveland, O.—Editor MOTOR AGE: Can you inform me which is the better to use in the case of the speed transmission gear on my gasoline automobile, oil, or grease, and what kind is the best?—Yours, etc., J. C. P.

Grease is better than oil. Oil will become gummy and will leak through the bearings. Apply to any automobile supply dealer.

To Repair Leak in Water Jacket.

Marion, O.—Editor MOTOR AGE: I have a slight leak in the water jacket of my gasoline motor. It seems to have a spongy or porous place, about 1 inch wide and 2½ inches long, in the side of the cylinder and between the water pipe connection openings. Can you tell me of any way by which I can remedy this defect? When the motor is not in use and cold, the leak is barely perceptible, but when the cylinder gets hot the leak is serious.—Yours, etc., W. A. K.

Remove the cylinder from the motor and wash the water jacket with a solution of sulphuric acid and water, taking care, however, not to allow any of it to get on the finished parts of the cylinder. Fill the water jacket with a saturated solution of sal ammoniac and plug up the opening. Place the cylinder in such a position that the leak is underneath the jacket and allow the cylinder to stand in this position for 4 or 5 days. Then empty and leave the cylinder standing for 2 or 3 days more until the leak has thoroughly rusted. This is generally an effectual cure.

That English Steering Device.

Elmira Heights, N. Y.—Editor MOTOR AGE: I have been a constant reader of MOTOR AGE since its first issue. I noticed in the last number a description of a new steering mechanism and desire to say that I designed one very similar to it about 2 years ago for a machine I was then constructing, only the whole apparatus tilted on a pair of trunnions with a sector allowing any position of the wheel without interfering with the steering. I had intended to make it the subject of a patent, but later concluded this to be useless.—Yours, etc., J. L. Spencer.

Charging a Small Storage Battery.

Goshen, Ind.—Editor MOTOR AGE: I shall be greatly obliged if you can tell me of some form of liquid battery which I can use to charge a small two-cell storage battery, which I use for ignition purposes on my automobile. As I am not convenient to a light circuit I have been using dry batteries, but find they do not give

as good results as a storage battery.—Yours, etc., M. S. A.

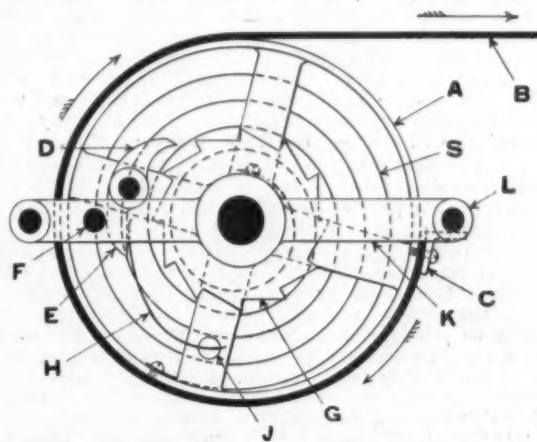
Use ten cells of gravity battery. They are low in first cost and inexpensive to recharge. Sulphate of copper, commonly known as blue stone or blue vitrol and water is all that is needed to charge the cells, no acids being used. When not in use put on closed-circuit with a resistance coil of about 150 to 200 ohms, as otherwise a slight local action takes place when the gravity cells are not in use.

Starting Device for Gasoline Motors.

Editor MOTOR AGE.—Kindly let us know through the columns of your valuable paper how to construct a starting device for a motor, similar to the one used on the Crestmobile. By so doing you will greatly oblige.—Yours, etc., Charles Seffrin & Co.

The accompanying sketch shows a simple form of starting device, which may be operated from the seat. A pulley, A, runs loosely upon the outer end of the crank shaft bearing, which is encircled for about three-fourths of its circumference by a belt B, which is attached to the pulley by means of the lug C, the extended portion of which forms a stop, to limit the rotation of the pulley as shown. A pawl D is swivelled upon one of the pulley arms, and has an extended curved portion E, which engages with the pin F, located upon the bracket K. A ratchet wheel A, which the pawl D engages, is keyed upon the motor crank shaft. A flat spring H, carried by the stud J, keeps the pawl D in mesh with the ratchet wheel G when the curved part E of the pawl D is not in contact with the pin F.

A flat spiral spring S is shown within the pulley rim, but is on the opposite side of pulley spokes to the



ratchet and pawl. The outer end of the spring S is secured to the inside of the rim of the pulley and the inner end to the hub of the crank shaft bearing. Upon the belt B being pulled in the direction of the arrows, by the lever used to operate the device, the pulley is partially rotated also in the direction of the arrows. This action releases the curved part E of the pawl D, from the pin F, allowing it to engage or mesh with the ratchet wheel G, causing a partial rotation of the crank shaft of the motor. Upon the lever being reversed, the spiral spring S rotates the pulley A in the opposite direction, and the operation is again repeated, until the motor gets under way. The function of the curved part E of the pawl D is to engage with the pin F, when the starting device is not in use, and keep the pawl D out of mesh with the ratchet G while the motor is running. The bracket K is supported on any convenient part of the frame by means of the lugs L.

Motor Age

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The editor will be glad to receive communications for publication. They must be accompanied by the names and addresses of senders, which will not be used if request be made to that effect. Contributions will not be paid for unless accompanied by notice that payment is expected.

Subscription, Two Dollars a Year, - Six Months, One Dollar

OBSERVERS WHO FAIL TO OBSERVE.

The Chicago event of Saturday last supplemented demonstrations already provided by earlier contests in the east, that the provision of official observers is not a sufficient check on the performances of vehicles in endurance contests. It has been stated that during the Long Island run operators made detours which, under the rules, should have been penalized. Without going outside of its own staff for information, MOTOR AGE is able to certify that in last Saturday's contest at least one stop was made which was not recorded by the observer. The difficulty referred to is due to two causes; first, unavoidable lack of experience on the part of observers, and second that the moment an observer enters a car he becomes a part of the outfit and is imbued, almost to the same extent as the operator himself with a desire to complete the journey as creditably as possible.

It is one thing to undertake to provide officials who will not be swayed by prejudice and are at the same time competent in other respects, and quite another thing to provide them. The committee of the Chicago club used its utmost endeavors to secure the services of men of ability and integrity. It did more than other promoting clubs have done, in that it provided, at considerable expense, an illustrated lecture showing points on the road and invited both operators and observers to ask all sorts of questions that might occur to them, so that there would be no reasonable excuse for not understanding every detail of the rules. Despite all these precautions some of the men provided overlooked the fact that they were to be observers pure and simple. It was their duty to record every incident of the ride and do nothing more. It was not their duty to watch water gauges, gasoline tanks or any part of the mechanism. They were permitted under the rules to render assistance to the operator after a car had stopped, but under no circumstances while it was running. These rules were transgressed.

Trifling misunderstandings, however, are of far less importance than acts of downright dishonesty. It has been asserted with such certainty that there seems no reason to doubt the accuracy of the statements that several stops were made which were not recorded by the observers. It is known beyond question that cars made detours to avoid arriving at controls ahead of

time, and MOTOR AGE observers report that they saw at least one car stopped, and with its engine at a standstill, of which incident the official observer made no mention.

The moral is plain: Either the promoting club must secure the services of men whom they would trust with their cash boxes or the events must take place over such short circuits that the entire course may be patrolled by officials. By selecting, say a course of 25 miles, to be covered four times, the interest in the event could be increased and the danger of unreliable reports could be avoided. It would be quite possible to secure such a course, giving the necessary variety of roads, within easy distance of Chicago, or, for that matter, of any other city.

STANDARDS IN RIM MANUFACTURE.

Creditable to its originator and of value to the industry is the movement headed by Mr. Pierrong, of the Standard Welding Co., having for its object the adoption of a standard in the number of holes bored in rims for tire bolts. So long as each manufacturer entertains an individual opinion as to the most desirable method of attachment and orders tires and rims accordingly tire manufacturers, automobile dealers and operators will encounter difficulties due to lack of uniformity. The tire manufacturer is unable to prepare uniform stock, the operator who breaks a rim or damages a tire is likely to be delayed a number of days in the use of his machine and the dealer, as the unhappy go between, is likely to have an unpleasant time of it. If the operator buys a rim and attempts to make it available by drilling additional holes he weakens the rim and renders his machine liable to another accident.

Tires are now made with lugs numbering from five to eleven. Mr. Pierrong believes that in rims to carry 26 and 28 inch tires five lugs are sufficient and that eight should be enough for from 30 to 40 inch tires. He proposes that the trade adopt these two sizes as standard. It would be necessary, however, for manufacturers of hubs, for both wire and wood wheels, to make their spokes conform to these requirements. Hubs for wire wheels are, as a rule, drilled for 36 or 40 spokes, while wooden wheels have either 12 or 16; hence, to secure uniformity, the rims should have either six or eight holes for tire lugs in order that none of the holes might be placed too close to the spokes, a fault not uncommon at present.

AMATEURISM IN RACING.

There has been some discussion lately of the question of amateurism in automobile racing. The cue to the discussion came from the L. I. A. C. offering the winners at the Brighton Beach meet on August 23 the choice of plate or cash. Officers of the A. A. A. declare that in the absence of any mention of the subject in the rules there could be no interference by the A. A. A. with the L. I. A. C.'s present solution of the problem. They acknowledge, however, that some day the question will have to be settled.

The secretary of the Amateur Athletic Union is extreme in his views and declares that those who race for money will be declared professionals by his body. The chairman of the National Cycling Association is more liberal in his ideas and thinks the automobilists should be permitted to make their own rules and definitions and that other sporting bodies should acquiesce in them. The opinion of those not connected with the various sport ruling bodies seems to be that it is nobody's business but the automobilists' and that the latter, being well acquainted with the conditions of their own game, can be relied upon to frame reasonable rules, that shall be to the benefit of the sport and industry. These are inclined to the opinion that the racing of automobiles has no more to do with athletics, cycling and running than has the driving of trotters,

the running of horses or the sailing of yachts, and that the A. A. A. should act as independently in its affairs as do the National Trotting Association, the Jockey Club and the New York Yacht Club in theirs. They point to the fact that amateurs ride against professional chauffeurs abroad in the great races and that this competition has been for the benefit of the sport and industry. In these common-sense views a large majority of all automobilists will doubtless share. A large majority of racing men will decline to worry themselves about the opinions of associations with which they have no connection.

HIGHER COMPRESSION AND SLOWER SPEED.

The prevailing tendency toward higher compression and slower speed in motors of European make is on the increase, and American builders might do worse than follow in some of these lines. A recent English production in the shape of a double cylinder automobile, gasoline motor, with cylinders of 4-inch bore and 5½ inches stroke, at 700 revolutions per minute, develops 12 B. H. P. A French automobile, gasoline motor of late date, has two cylinders approximately 4½ inches bore and 6 inches stroke, and develops 15 B. H. P. at the remarkably low speed of 650 revolutions per minute. Considering the bore and stroke of these motors and their speeds, in comparison with some of recent American make, whose relative dimensions, speed and horsepower are known, they show a remarkable advance in the way of increase of power and the reduction of speed. There are several makes of motor vehicles in this country with double cylinder motors of smaller dimensions than those above mentioned, but whose power is claimed to be almost as much by their makers but at speeds of from 1,200 to 1,500 revolutions per minute, which from a mechanical standpoint and from a constructive point of view is not good practice in motors of such size and power, tending toward a gradual and sometimes even rapid wear and tear upon the concomitant working parts, and also to a general disintegration of the motor itself. Objection may be made to the fact that motors with high compression are harder to start by hand, than those with lighter compression, and need heavier fly wheels as well. But these points are obviated in the motors of European make by suitable mechanical devices which control the degree of compression attained in the cylinder and also the ignition mechanism, so that on starting the motor by hand the compression is not over 2 to 3 atmospheres, but can be brought up to as high as 6 or 7 atmospheres in operation, the ignition mechanism being controlled accordingly. There is little added mechanism or complication in the devices used to attain these results, and these points are certainly worthy of attention.

WHY SHORT DISTANCE TESTS FAIL.

It is not improbable that the test of Saturday last will be the last of importance of its kind. It is probable that there will be a number of minor events which will serve a useful purpose for local advertising, but the clubs, and above all the manufacturers, who have had to bear the expense, have had sufficient of a form of tests which is bound to result unsatisfactorily in some cases.

The trade press and other mediums of publicity will show this week that certain machines were awarded blue ribbons and others minor honors. To the average reader this means that the one is a perfect machine and the other something short of it. The fact is that in the matter of reliability, as demonstrated by the test, over such a course as that of last Saturday, there is little to choose between the winners of ribbons, no matter what the color may have been. The stops, in a great many cases, were due to the most trivial causes. Take, for example, the records made by the three Ram-

blers. All arrived within a minute or two of the minimum time allowed under the rules, one of them, indeed, being a minute or so too early. In other words, they had shown speed of 15 miles an hour for the distance and had returned to the starting point in as good condition as when they started, with at least as good a record for water and gasoline consumption as the average for their class. Yet not one of them received a blue ribbon. In one case a switch was misplaced by some method unknown. In another a cotter pin dropped out of the top of the exhaust valve stem. The third stopped for some trifling thing, details unknown, its total delay being 1 minute and 30 seconds.

Equally trifling was the cause of stoppage of the Northern machine. It was due to the binding of a valve which had been fitted a little too tightly. A few drops of oil remedied the trouble. Still another incident. The operator of a Friedman, only a block from the finish, was bound, in order to avoid running into a team which turned directly in front of him, to use his reverse so suddenly as to stop the engine. These are mere samples which could doubtless be duplicated a number of times and cannot be considered as anything against the general reliability of the machine.

Another feature of tests which needs consideration, is that light vehicles have been expected to make, exactly the same showing as heavy ones. This is about as fair as expecting a small yacht to travel as far and as fast as an Atlantic steamship. These difficulties have been caused by following too closely the rules laid down for European contests conducted over roads in great part superior to our boulevards.

Happily the committee in charge of the New York-Boston reliability test is composed of gentlemen of experience in the work they have undertaken. The rules have not yet been formulated, but will doubtless show such changes as have been shown to be desirable by the contests of the past.

IMPOSSIBLE FEAT SUGGESTED.

When the members of the Chicago club suggested an endurance run from New York to Chicago they were impressed with the idea that even under lenient conditions such an event would test the best machines thoroughly. But one New Yorker thinks such a test is altogether too simple. Basing his arguments on European events, he suggests that the trip should be made without a stop, evidently overlooking the fact that the 1,000 miles test promoted by the Automobile Club of Great Britain occupied a week and that the longest non-stop journey on record, made over splendid roads, is something less than 500 miles. The gentleman referred to has evidently an extremely limited experience with American roads. Only on rare occasions does a locomotive, favored by every possible condition, travel more than 120 miles without a stop, or more than 300 miles without a rest. It would be a phenomenal machine indeed that could make one-quarter of the proposed journey without coming to a standstill.

EXEMPTION OF TIRE TROUBLES.

The opinion was freely expressed in connection with the Chicago club's endurance run that the time for excusing tire troubles has passed, and that in future contests they should be penalized, in case of failure, just the same as any other damaged part. It seems to be the opinion of many people in the trade that so long as no cognizance is taken of tire troubles there is little incentive to the manufacturer to improve his product, while, if penalized, he would feel the necessity of putting forth every possible effort toward that desired consummation, a tire that will puncture so seldom that its owner will feel no uneasiness concerning it. That all tires are too light is well known. Perhaps penalization would result, as some makers believe it should, in increased dimensions and corresponding efficiency.

TWO BOYS IN AN AUTOMOBILE.

Claim First Trip from New York to Chicago in a Light Carriage.

An Oldsmobile which had carried James R. McConnell and George Garrett all the way from New York came into Chicago last Wednesday night. The boys had traveled 1,174 miles and had been 32 days on the road. Here is McConnell's own story of the ride:

We started from New York on June 28. I was at the Morristown school and my father gave me the machine. I wanted to do something with it and had about 2 months to spare. I had never taken a trip of more than 50 miles. My mother and sister were coming west to visit, and I thought it would be great fun to come out in the automobile. I wanted to get the machine through, as it would be the first light weight gasoline machine to make the journey. I had the machine overhauled when I came from school. I first ran down to Atlantic City for a test and then started for Chicago with my friend, George Garrett, who was working for the Olds company.

People laughed at me when I told them what I was going to do. That made me mad, and I was bound to get through then by hook or crook. The first day out we made 55 miles to Nelson Hill, said to be the highest hill on the route. I don't believe it is the highest, however. We broke our fiber gear on the hill and put in a bronze gear that we carried with us. We stayed at a farm house that night and the next day ran in the rain just a little way to Cold Springs. The next was the longest run that we had made yet, about 80 miles.



From there to Albany we encountered the worst roads that we found anywhere on the trip. Our motor became heated and there was "pound" in it. We worked until 12 o'clock that night putting in a new gasket, and started on the next afternoon. We ran 46 miles under good conditions. Then we made Little Falls. There were bad roads all the way from Fonda to Little Falls.

The next day we pulled into Utica. The mud was almost up to the axle, and but for the tow path along the Erie canal I think we would never have made it. As we ran up the incline to the tow path we cut the pin in the differential gear. We had to be towed 2 miles into Utica. That was the only time of the trip

we were towed. When we had the machine fixed up I started to run it on the floor of the Remington shops and broke a gear. Then we had to wait about a week for a new gear.

We finally got away and ran to Syracuse. We left there and made Rochester. Our record was 9 hours in running 100 miles. We went to Buffalo the next day and had put on a new rear axle. From there we went to northeast Pennsylvania, just half way to Chicago. It seems to me now that it was about one-fifth of the way.

The next night we got to Madison, Ohio. From Utica to Cleveland we found good roads. We stayed in Cleveland 4 hours, putting in new batteries. At Elyria it cost us 30 cents for lodging, breakfast and dinner for two at a farmhouse. We had to wait at Milan for a tire that we had telegraphed for. On July 20 we made Toledo, 63 miles, in 8 hours. After 2 days we ran to Swanton, 27 miles. From there our route was through Kendallville, Goshen, La Porte and South Bend. We had trouble with our tires and made several stops for repairs.

From Valparaiso to Chicago the roads are all gravel. But from South Chicago we had to follow the railroad tracks. Nobody seemed to be able to direct us and we had to feel our way. Once a farmer's team ran through a fence and another tipped a wagon over. Another team backed off the road and broke the harness. We paid the man a dollar. I shall not try to go back in the machine. It takes too much time and my vacation is nearly gone. I am preparing for Yale.

CLEVELAND RACE PROGRAMME.

Cleveland, O., Aug. 5.—Cleveland's first automobile race meet will be held Sept. 16, according to the program announced by Chairman Shanks. The Detroit meet will be held Sept. 19 and 20. The Cleveland meet will be held on Glenville track, which is claimed to be the fastest in the country. It is believed by Cleveland enthusiasts that all records for a circular track will be broken. George Collister has a wager that Winton, with his Bullet, will make a circuit of the course in less than one minute. The track is undoubtedly faster than that at Detroit, as it is much wider and has a springy clay surface.

Among other events the committee has decided on the following: Five-mile open, for gasoline vehicles under 1,000 pounds; 5 miles for steamers; 5 miles for machines weighing over 1,500 pounds; 1 mile open, electric vehicles; exhibition by Water Baker and his electric flyer; pursuit race between Winton and a competitor, and a 10-mile handicap for all comers. Each machine will be handicapped according to type, horsepower and experience of operator. It is expected that Winton with his new wonder will start from scratch.

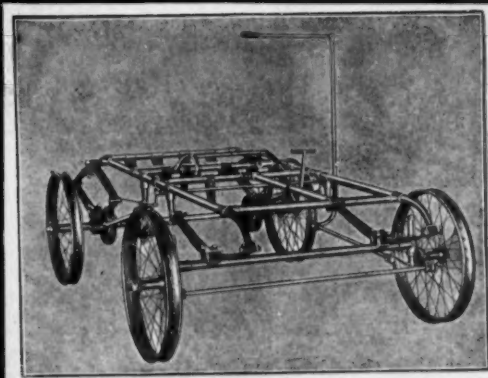
DARRACQ ADDS A NOTABLE VICTORY.

Paris, July 2 (Special correspondence)—To the Automobile Club du Dauphine the warmest congratulations are due for its splendid organization and management of the Laffrey hill contest. Contests of the same kind have been held in the past but the inclines were either too short, as at Gaillon, too easy as at Chanteloup, or too irregular as at Turbie—sharp rises, alternating with long stretches of flat surface, where the motors were able to recover from their exertions and therefore were not given a continuous test. With the trial under notice matters were entirely different. Here we had about four miles of splendid gradient, rising at an average of about 10 per cent through one of the most mountainous and picturesque districts of France with only one or two stretches with a slight decrease in the grade. It was such an incline, in fact, as taxes the motor to its utmost, so that any vehicle which passes through the

HERCULES RUNNING GEARS

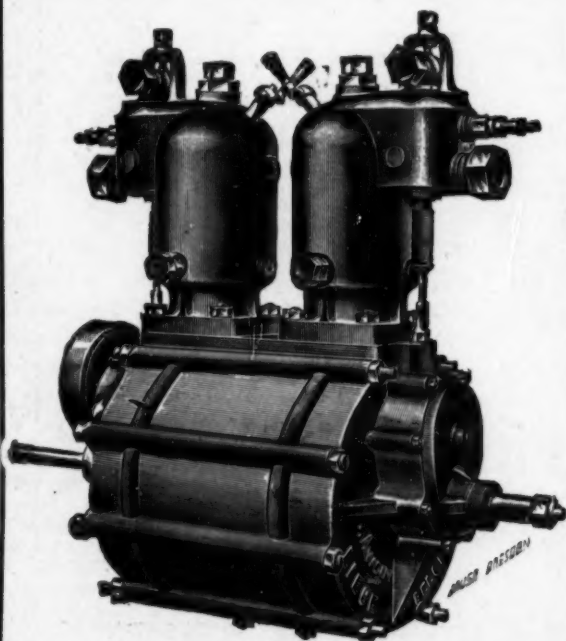
For Electric and Gasoline Vehicles

There are
no weak spots
in these gears.
Original design;
sound
construction.



We supply
parts of these
gears to concerns
desiring to
modify our
construction.

FEDERAL MANUFACTURING COMPANY
SMITH STAMPINGS FACTORY
Milwaukee Wisconsin



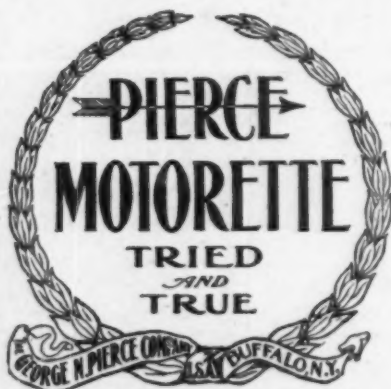
KELECOM MOTORS FOR IMMEDIATE DELIVERY

Sizes: 1½ h. p., 5 h. p., 7 h. p.,
9 h. p. and 11 h. p.

The Kelecom has been proven in American and European contests to be one of the most reliable and economical engines on the market. American builders who are using Kelecom Motors are all behind in their orders. The 1½ h. p. Bicycle Motor is without an equal. Send for descriptive matter. ❀ ❀ ❀ ❀ ❀ ❀ ❀

A. H. FUNKE,

98 Duane Street,
NEW YORK.



Four Blue Ribbons

and the Chicago Club's Silver Cup.
Four consecutive victories, with
scores of 100 per cent.

"A Perfect Performance"

was the verdict in the Chicago Automobile Club's One Hundred Mile Test last Saturday, duplicating the record at Long Island, April 26; New York, May 30; Kansas City, July 19.

We are the only builders of an automobile who have won a blue ribbon in all of these events. The results were accomplished with a single entry in each test—the same machine won them all.

AS TO ECONOMY:

100 miles at Chicago, 3 1-4 gals., cost 40 cents; 100 miles at New York, 4 gals., cost 48 cents—an average cost of 0.44 cents per passenger per mile. This is an unexampled record in America, and, we believe, in the world.

The George N. Pierce Co., Builders

Buffalo

New York

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Agencies in all principal cities.

ordeal successfully may be considered a capital hill climber and capable of any work to be reasonably expected of it.

The meeting was extensively advertised by the newspapers and participated in by most of the leading makers, who did not hesitate to send their representatives 400 miles from Paris to take part in the contest. Though the roads were still heavy from a late thunder storm the speed shown by the successful competitors was remarkable. Most prominent among the performances were those credited to the Darracq light car, which seems to be as good on the hill as on the level. Serpollette, the champion of steam vehicles, was an easy first in his class and a good second in the entire field. Clement scored three firsts. Everything connected with the meeting passed off so satisfactorily that it is now sure to become an annual fixture. The general results, irrespective of class distinctions, were as follows:

	Time.
1. Darracq light car, 20 horsepower.....	10:00
2. Gardner-Serpollette, 12 horsepower.....	10:06 1-5
3. Darracq light car.....	10:21 2-5
4. Rochet-Schneider light car.....	10:49
5. Clement motor bicycle.....	11:19 4-5
6. Rochet-Schneider light car.....	12:11
7. Clement light car.....	12:32 1-5
8. Peugeot light car.....	13:06
9. De Dietrich light car.....	14:05 3-5
10. Clement light car.....	14:10 4-5
29. De Dietrich heavy truck.....	1:19:56 1-5

NEW YORK-BOSTON DATE AND COURSE.

New York, July 31.—Important changes in the A. C. A. New York-Boston reliability run plans were made at today's meeting of the committee. Instead of starting on Oct. 6, as first announced, the run will begin on Thursday, the 9th. The route will be through Bridgeport, Hartford and Worcester. Boston will be reached Saturday night. There will be a rest over Sunday, the machines being under the surveillance of the official observers, though not confined to the control storage station.

The homeward journey will begin on Monday and end on Wednesday. It will be over the same route as the outward bound one. The controls out and back will be at New Haven, Springfield and Boston. Park Square station will be secured for storage at Boston, and commodious stations will be provided at Springfield and New Haven. The contending vehicles will be under guard over night. Great care is to be exercised in selecting the official observers with regard to their technical knowledge.

The solution of the part replacement problem has not been announced and will not be until Secretary Butler's return from a trip over the course on an automobile, on which he started today.

BUREAU OF AUTOMOBILE MECHANICS.

New York, July 31.—Most of the time of today's meeting of the A. C. A. governors was devoted to the discussion of the "autoequine" school scheme. G. F. Chamberlin and W. E. Buzby gave enthusiastic reports of the schools they had established at their country places at Rye and Highland Mills. Secretary Butler informed the governors that inquiries are coming in from all over the country for copies of the circular letters of suggestions as to methods of training horses to automobiles. These had been sent to every club in the United States with a request that they be given local publicity. This has evidently been done.

A new scheme was set on foot—the establishment by the club of a bureau of mechanics. It will be practically a chauffeur employment bureau for the convenience of the members. Applicants to be placed on the list of approved chauffeurs will be obliged to state their

experience and give references, which will be investigated.

Gen. Roy Stone and Jefferson Seligman were made representatives of the club in the Associated Road Users, the local highway improvement organization formed last spring by the automobile, cycling and road driving

MRS. HUNTINGTON'S PANHARD LIMOUSINE.

Mrs. Collis P. Huntington has a Panhard limousine, which she recently imported from France. This machine is the only one in this country that is similar in construction to one recently made for King Edward. While in Europe Mrs. Huntington rode 800 miles, the trip being made from Paris to Nice, in this coach-like automobile. Although the machine is a heavy one, and is propelled by a 12 horsepower engine, it is easily capable of averaging 20 miles an hour.



Mrs. Collis P. Huntington's 12 horsepower Panhard, to seat 7 persons.

Mrs. Huntington has already taken several long journeys through the Empire state and New England. Her crew consists of a chauffeur, Francis Gushan, and a footman, Jay Bennett. The carriage is upholstered in buff-colored material, and the body of the car is a dark red. There is accommodation for six persons.

Good Roads Workers Visit Chicago.

Among the visitors at the Chicago Automobile Club house last Friday night on the occasion of the lecture to operators and observers were W. L. Dickinson, treasurer of the New York and Chicago Road Association, and L. M. Boardman, of the New York Tribune. Speaking of the work of the association, Mr. Dickinson said: "We find that public sentiment in the East demands this movement. Nothing will satisfy them now but good roads on a trunk line system. We want first a through line from New York to Chicago, and when we get that the lateral roads will come as a matter of course. Martin Dodge, the director of Good Roads Inquiry at Washington, says he can assure us of the government's aid to the extent of 25 per cent of the cost of building. We want the people to understand that by applying to the legislature they can get all through the county, state and national governments."

The A. B. C. of the Gas and Gasoline Engine

34. Fig. 10 shows a vertical cross section of a two-cycle type of engine; that is to say, it shows the engine, as in the case of Fig. 8, as it would appear if cut in two directly through the center. This type of engine is particularly adapted to marine purposes on account of its simplicity, absence of gearing and the slight knowledge required on the part of the operator to handle it successfully. This form of motor, however, has not been found the most satisfactory for stationary purposes.

Its cycle of operation was fully described in paragraphs 16 to 18 of this series of articles.

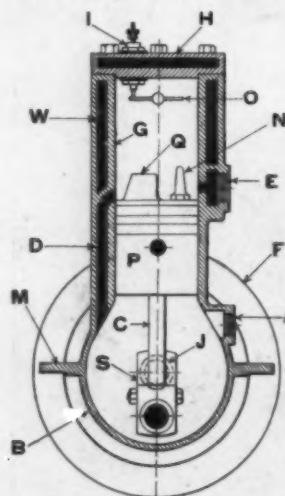


Fig. 10.

35. B is the crank chamber. It has two feet, or lugs, M as shown in the drawing, for the purpose of attaching it to its position in a float or elsewhere. There is a threaded opening at A for the reception of the be fully described later. mixing valve, which will The fly wheel F, crank shaft S, bearing J, connecting rod C, piston P, inlet port D, baffle plate Q and exhaust opening E, whose purposes have all been fully described, are plainly shown in the drawing.

36. To the top of the piston P is attached a cone pointed projection N. This is on the right hand side and is placed there to break the electrical circuit between the contact points of the igniter. This is effected by the cone point N striking the right hand end of the lever O, which causes the lever to rise at that end and fall at the other, thus breaking the contact between it and the insulated igniter terminal I. This breakage of the circuit causes a spark to occur between the left hand end of the lever O and the point with which it was, a moment before, in contact. This action takes place once in each revolution of the motor and just before the piston reaches the end of its upward stroke.

37. The upper part of the cylinder is incased by a water jacket W, as is the cylinder head or cover H. The purpose of this water jacket was fully explained in paragraphs 30 and 31.

38. The reader should have learned by this time the principles of operation and the form of the two types of engines commonly used. Should more explicit instructions be required, however, they will be cheerfully given on request. We will proceed with instructions for starting the engine in operation.

39. To start the engine it is essential that the piston be made to travel backward and forward in the cylinder at least once and generally twice so that the necessary charge of vapor may have been taken in and all the parts placed in proper position to perform their respective functions. For that reason every small engine has upon its crank shaft an extension to which a starting crank may be fitted.

40. The gas or gasoline valves, or carburetting device, supplied with stationary engines, are so marked that the operator should have no difficulty in properly adjusting them. This subject, however, will be given exhaustive treatment in its proper place. After this valve has been set at the proper point and the hot tube, or electrical ignition device, has been placed in shape to fire the charge, the starting crank is given one or more turns. This results in the firing of the charge and setting the engine in motion.

41. In the case of engines of medium size, fitted with hot tube ignition, the fly wheels are rocked backward and forward several times by hand to insure the admission to the cylinder of a charge of sufficient density to effect the starting operation. It is necessary, however, to avoid turning the fly wheels far enough to ignite the charge. Then the fly wheels are given a quick partial rotation backward, forcing the piston to the ignition point, resulting in the firing of the charge in the cylinder.

42. The same plan is followed in starting an electrically fired engine, but in this case the igniting mechanism is moved from the point of early ignition at which it is set, that is to say, slightly before the piston reaches the end of its stroke, to a point very slightly after the end of the stroke. The object of this is to avoid premature ignition of the charge, commonly known as "back firing."

43. It might be well to explain at this point, without entering into theoretical details, that when an engine is running at normal speed the ignition device is so set that ignition takes place before the piston reaches the end of its stroke. The later the ignition takes place the slower the speed of the engine and consequently the less power it will develop. If, however, in starting the engine the electrical ignition device were set to operate before the piston reached the end of its stroke back firing would result, resulting in a reversal of the operation of the engine and possibly in injury to the operator.

44. Engines of large power are usually provided with a special firing device. The crank shaft is turned until it is on what is known as the back center, or until the piston has reached the end of its inward stroke. The combustion chamber, or, in other words, the space between the piston and the head of the cylinder, is then filled with vapor, under compression, by means of a hand pump. This applies no matter whether hot tube or electrical ignition be used.

45. In the case of hot tube ignition the combustion chamber is provided with a percussion device, consisting of a short cylinder with spring plunger and removable

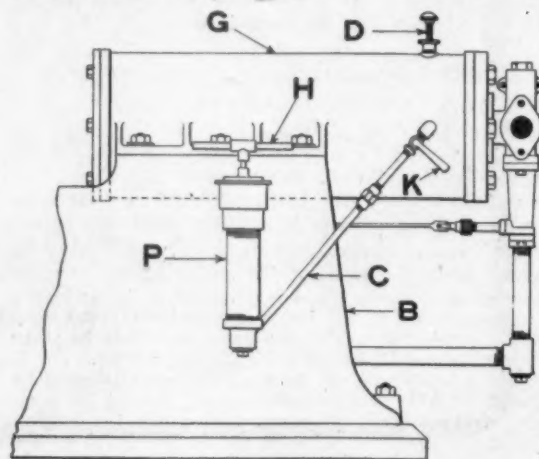


Fig. 11.

Studebaker AUTOMOBILES



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is admirably simple in construction, safe, easy to operate and remarkably free from vibration and noise. It is not a racing machine, but a strongly built practical motor-vehicle for everyday service on country roads and city streets.

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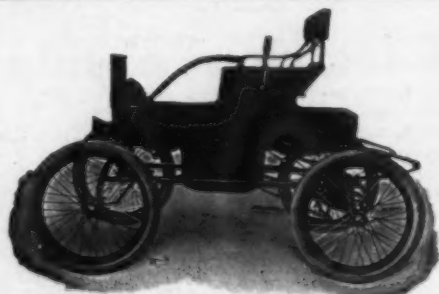
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cap. This is usually screwed into the top of the cylinder. A small cap or sometimes the head of a match is placed inside of it. While one man stands at the fly wheel another strikes a knob on the spring plunger rod, exploding the cap or match head. This fires the charge and at the same instant the operator at the fly wheel turns it so as to move the piston a short distance off the center in the direction in which it travels, and the ignited charge does the rest.

46. In cases of electrical ignition the method of starting, after the charge has been pumped into the combustion chamber, is similar to that described for engines of medium power; that is to say, by turning the fly wheel with the ignition device so set as to operate immediately after the piston has reached the end of its outward stroke. The igniting device is, of course, set in its proper position after the engine has started.

47. Fig. 11 is a side elevation of the cylinder and the rear portion of the base of a large engine showing one form of starting device. There are a great variety in use. With the exception of the cap firing device D this method may be used with either form of ignition. Some such device as this is absolutely essential, for it is almost impossible, in medium powered engines and utterly so with those of large power, to start them in the manner described for application to small engines. In the device illustrated P is an air pump, and H its handle. The pump is attached to the base B and a pipe C leads from the pump to a point within the combustion chamber near its head. On the top of the cylinder and about in line with the end of the pipe C is the cap igniting device D referred to in paragraph 45. By removing the thumb nut shown below the spring at D, together with the spring and plunger rod, the cap or match head may be inserted. The parts are then replaced, and the engine is ready to be turned over by hand until the crank shaft is in the position previously described. The charge is then pumped in, the cock K closed and the engine is in position for the work of the operator described in paragraph 45.

(To be continued.)

CORRECT DIAMETER AND LIFT OF VALVES.

In response to requests of several subscribers for information on the correct diameter and lifts of valves of gasoline motors, the following table and formulas are furnished. The table gives the correct diameter of valve openings for motors from 2½x2½ to 8x8 and with speeds of from 2,100 to 450 revolutions per minute. The speeds are also given in piston feet per minute, to enable the user of the table to make comparisons between motors of varying stroke and speed.

Example: What is the correct diameter for the inlet valve of a 4½x4½ motor at 1,000 revolutions per minute?

Answer: The second column in the table shows that it should be 1½ inches. Fig. 1 shows the diameter D, referred to in the table, so that it may be clearly understood, as some persons are in the habit of referring to the outside diameter of the valve itself instead of the opening in the seat. For any desired bore and stroke and speed in revolutions per minute not given in the table the following simple formula may be applied:

Let D be the diameter of the cylinder in inches, and S the stroke of the piston in inches. As N is the number of revolutions per minutes and d be the diameter of the valve opening, then

$$d = \frac{D \times S \times N}{13,500}$$

Example: Required, the diameter of exhaust valve opening for 4x6 motor at 600 revolutions per minute.

Answer: 4 multiplied by 6, and by 600, equals 14,400, and 14,400 divided by 13,500 equals 1.07 inches, as the proper diameter of the valve opening.

Figure 2 shows a valve with bevel seat of 45 degree

angle, which is most commonly used. For this type the lift should be about three-eighths of the diameter of the valve opening; that is if L is the lift of the valve, and D is the diameter of the valve opening, then

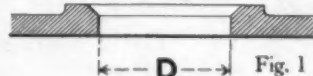


Fig. 1

$$L = \frac{D}{2.83} = 0.35 D$$

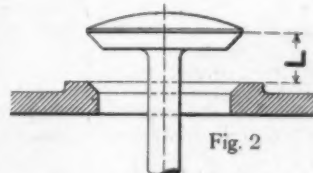


Fig. 2

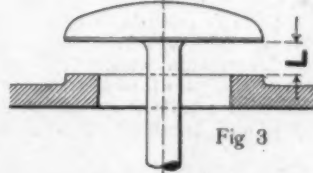


Fig. 3

Figure 3 is a valve, with flat seat, which is known as the mushroom type, on account of its shape. This style requires only one-fourth the diameter of the valve opening for its proper lift. That is, if L be the lift of the valve and D the diameter of the valve opening, then

$$L = \frac{D}{4} = 0.25 D$$

The bevel seat type of valves are to be preferred to the flat seat or mushroom type, for two reasons; first, that they are more easily kept in shape by regrinding, and, second, they give a freer and more direct passage for the gases as will be plainly seen by reference to Figures 2 and 3.

BORE OF CYLINDER.	STROKE OF PISTON.	PISTON SPEED IN FEET PER MINUTE.					
		900		750		600	
		Revs. per Minute.	Dia. of Valve Opening.	Revs. per Minute.	Dia. of Valve Opening.	Revs. per Minute.	Dia. of Valve Opening.
2½	2½	2100	0.91	1800	0.83	1440	0.74
2¾	2¾	1950	1.00	1640	0.92	1310	0.82
3	3	1800	1.09	1500	1.00	1200	0.89
3¼	3¼	1660	1.18	1380	1.08	1110	0.96
3½	3½	1570	1.27	1285	1.17	1030	1.04
3¾	3¾	1440	1.36	1200	1.25	960	1.11
4	4	1350	1.45	1125	1.33	900	1.18
4½	4½	1200	1.63	1000	1.50	800	1.33
5	5	1080	1.82	900	1.66	720	1.48
5½	5½	965	2.00	820	1.83	655	1.63
6	6	900	2.18	750	2.00	600	1.77
6½	6½	830	2.36	690	2.17	555	1.92
7	7	780	2.55	645	2.33	515	2.08
7½	7½	720	2.72	600	2.50	480	2.22
8	8	675	2.90	560	2.66	450	2.37

Overman Factory Running at Full Capacity.

It is reported from Chicopee Falls, Mass., where the Overman factory is located, that the plant is rushed to its utmost capacity to meet the demands for its carriages. The company is at present at work on twenty-five small machines and ten of the larger type of which the first sample was sold at the time of the last New York endurance run. The company is enjoying a satisfactory demand for parts and for the famous Victor pump.

The Smelzer Engine Co., Frankton, Ind., is manufacturing a one revolution cycle engine in which the compression runs as high as 100 pounds. The engine is horizontal, is extremely simple in design and construction and is being turned out in quantities for farm and shop use, in fact for all purposes where small units of power are required, at nominal expense.

Principles and Operation of an Induction Coil

"In physics," says the Century Dictionary, "induction is the process by which a body having electrical or magnetic properties calls forth similar properties in a neighboring body without direct contact. This property is known as self-induction and is caused by the reaction of different parts of the same circuit upon one another, due to variations in distance or current strength."

According to the same authority "an induction coil is an apparatus for producing currents of induction and for utilizing them. It consists essentially of a coil wound on a hollow cylinder or tube, within which is a core formed of a bundle of soft iron wire. The coil of wire, called the primary coil, is of comparatively coarse wire and is connected with a battery by means of an arrangement for making and breaking connection

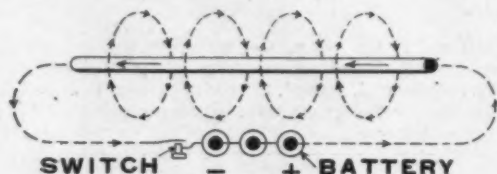


Fig. 1

with it so as to produce temporary currents. The currents produced by the induction coil may have a very high electromotive force and hence great power of overcoming resistance."

The average user of an automobile is well aware that without his battery and his spark coil his engine would not operate. He has learned that, when his spark fails, there are certain forms to be gone through to ascertain the cause of trouble, but there most of us are in difficulties. It is desirable that we should all know more of this all-important subject.

If a current of electricity be caused to flow through a straight conductor forming a part of a closed electric circuit, lines of force, commonly called magnetic whirls or waves, are induced in the air and rotate around the conductor.

If the current of electricity be flowing in the circuit and through the straight conductor from right to left, as shown in Figure 1, the lines of force or magnetic whirls will rotate around the conductor from left to right, or in the direction of the hands of a clock. On

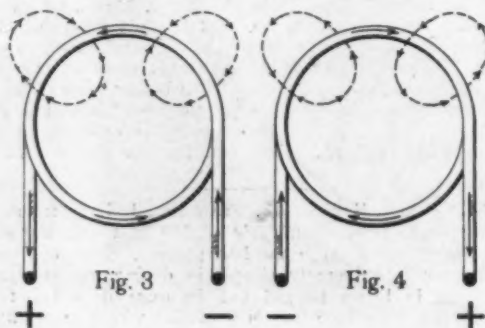


Fig. 3

Fig. 4

the other hand, if the conditions be reversed and the current flows from left to right the lines of force or magnetic whirls will rotate from right to left, as shown in Figure 2. The direction of rotation of these lines of force or magnetic whirls may be positively determined by the use of a galvanometer, an electric testing instrument having a needle similar in appearance to that of an ordinary compass. Upon placing this instrument in the path of the lines of force and making and breaking the battery circuit by means of the switch, the needle of the galvanometer will be deflected from its zero point in the direction of the rotation of the lines of force. If the direction of the flow of the electric current through the circuit be changed by reversing the poles of the battery, the needle of the galvanometer will be deflected from its zero point in the opposite direction. Whether these lines of force or magnetic whirls rotate continuously around the wire has not been demonstrated. They rotate with sufficient force to be tested by the galvanometer only until the electric current in the closed circuit has reached its maximum value after closing the circuit; that is to say, only during the infinitesimal space of time required by the current to reach its full value or power.

If, instead of a straight conductor a loop of insulated

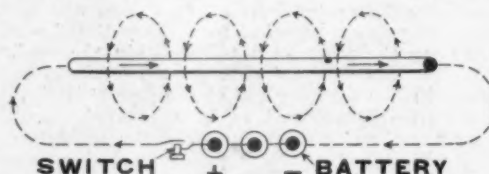


Fig. 2

wire, in the form of a circle, be utilized for the passage of the current, as in Figures 3 and 4, the lines of force will still rotate around the wire as shown, their direction being dependent on the direction of the electric current. If the electrical circuit be provided with a current reverser, or device for changing the battery connections in the circuit from positive to negative and vice versa, the lines of force can be made to rotate rapidly first in one direction and then in the other, as indicated in Figures 1 and 2.

Suppose this loop of insulated wire be composed of a great number of turns, it then becomes a coil or closed helix (Figures 5 and 6), and as the lines of force cannot pass between the turns of the electrical conductor forming this helix they must pass completely through the helix instead of rotating around a single loop, as in Figures 3 and 4. If the current flows through the conductor in the direction indicated by the arrows at each end of the helix, Figure 5, and over and around the coil in the direction shown, the lines of force will flow through the coil from left to right and complete the path or circuit through the air, returning into the coil at the opposite end. If the current be reversed and flow around the coil in the direction of the hands of a clock, the lines of force will flow through the coil in the opposite direction, as in Figure 6.

This form of coil or closed helix may be designated as the primitive form of an electro-magnet. When forming part of a closed electric circuit it possesses the property of magnetizing a bar of wrought iron placed within it. If a short round bar of wrought iron be placed a short distance within the coil and the battery circuit be closed, the iron bar will, if the current is sufficiently strong, be sucked or drawn into the center of the coil and considerable effort will be required to remove it. With a removable or sliding wrought iron core this form of coil or closed helix is known as a solenoid, and is

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used in electrical mechanics for a number of practical purposes. With a permanent wrought iron core in its interior it becomes the electro-magnet of commerce and has many and varied uses.

The object of the wrought iron core, in any form of spark coil, is to increase the magnetic effect of the

as a sport and an industry, that the question is often asked if the present period of expansion will be followed by a collapse as complete and as disastrous as was that of the cycling boom of a few short years ago. Careful observers, while admitting that the sport, like any other that has ever obtained the favor of a fickle amuse-

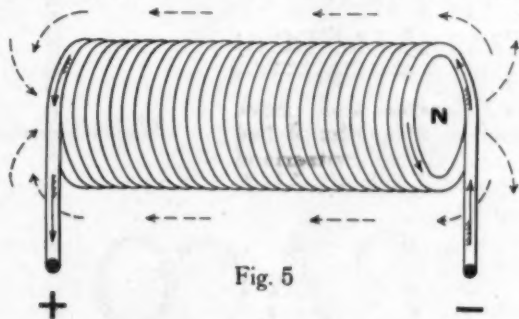


Fig. 5

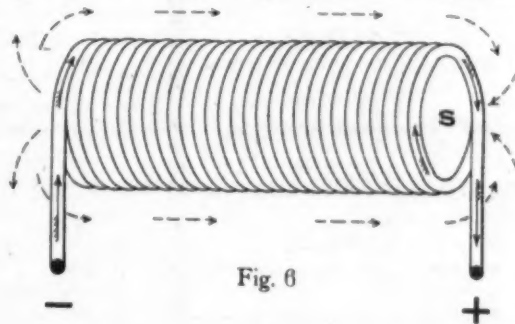


Fig. 6

lines of force, or rather to reduce the resistance of their path or passage through the coil. As the magnetic resistance of air is about 100,000 times greater than that of wrought iron the introduction of the iron core into the coil increases its magnetic effect enormously.

As has been stated, and is illustrated in Figures 5 and 6, when a current of electricity flows through the conductor or wire forming the coil or closed helix, lines of force are induced and flow through and around the exterior of the coil. In like manner, when the electrical circuit is broken, the lines of force suddenly reverse their direction, traveling through the coil at tremendous velocity until they reach a state of neutralization. During this sudden reverse action a current of electricity is induced in the coil, but in the opposite direction to that in which the battery current was flowing. This forms the basis or principle of the form of the induction coil, commonly known as the primary or plain spark coil, when a wrought iron core is inserted. The effect of this induced current, which is of far greater intensity than the battery current which induced it, is to form an arc at the breaking point in the circuit.

When the electric current is flowing around the coil in the direction of the hands of a clock, as in Figure 6, the right-hand end of the coil is known as the south pole and the left-hand end of the coil as the north pole. When the conditions are reversed and the current flows in the opposite direction, as in Figure 5, the right-hand end of the coil becomes the north pole and the left-hand end the south pole. This is clearly illustrated in Figures 7 and 8, where two views of the end of the coil are shown with the current flowing in opposite directions, as in Figures 5 and 6.

The two forms of induction coils in common use will be shown and described next week and their application to the principles above outlined properly explained.

(To be Continued.)

IMPORTANT CORRECTION.

Through an inexcusable blunder on the part of the printer and proofreader the letter S was omitted from the second formula in the article on "Testing the Prony Brake," in the issue of July 31. The formula as corrected should read as follows:

$$B. H. P. = \left(S - \frac{L \times W}{G} \right) \times \frac{R \times N}{63,025}$$

The Stability of the Industry.

Automobiling is following the history of cycling with such remarkable closeness in almost every detail, both

ment loving public will pass through a period of rise and decline, do not look for any such experience as the bicycle industry passed through. In the first place, the warning of that experience is still borne in mind and the present high prices and insufficient supply of motor vehicles are due to the conservatism of the manufacturers in regulating production quite as much as to the large demand for the vehicles. In the second place, the amount of capital necessary to engage in the business is much larger and is sufficient to deter those with small means from venturing into the making of motor vehicles. And finally it is pointed out that the prices of the vehicles will never be sufficiently low to make them as widely popular as were bicycles, and though the wealthy enthusiasts who import expensive racing machines may eventually tire of the sport, the demand for vehicles for touring and ordinary pleasure use and for



Fig. 7



Fig. 8

business purposes is growing naturally and steadily and is unlikely to be affected by any loss of popularity of the sport among the very wealthy classes.—New York Times.

Not many months ago \$1,000 was willed to a conductor of The Chicago & Alton Railway for being attentive and courteous. A somewhat similar circumstance has recurred. Mr. H. J. Titus, a steward on one of the "Alton's" dining-cars, recently had for a guest a gentleman to whom he unconsciously gave such polite attention as to attract his patron's notice. Upon arrival of the train in Chicago, this passenger, who was a high official of the Mobile & Ohio Railway, repaired to the general offices of The Chicago & Alton Railway, and being assured of Mr. Titus's ability, promptly appointed the latter Superintendent Commissary of the Mobile & Ohio Railway. Mr. Titus assumes his new duties August 15, with headquarters in Jackson, Tenn. He will be the youngest railway superintendent of dining-cars in the United States, his age being but twenty-four.



Matters of Commercial Interest



THE STUDEBAKER ELECTRIC AUTOMOBILE.

The Studebaker electric automobile shows radical departures in several respects. Practically all the weight, including the motor, is carried above the springs. It has no reaches. These features follow what is conceded to be the latest and best automobile practice. The noise and rattle incident to carrying motors on reaches or rear axles, and the resulting wear and rapid depreciation of gears, pinions and motors, are claimed to be absent. On the Studebaker runabout, the battery is carried in the rear of the body compartment. The motor is rigidly suspended from the frame of the gear, and is located just in front of the battery. It is claimed for this machine that it is not only silent running when new, but will remain so indefinitely. It is also claimed that, owing in part to the above described features, the expense of repairs and maintenance is remarkably slight—much less than has hitherto been thought possible.

The Studebaker Bros. Mfg. Co. has been established for 50 years. At the plant at South Bend, Ind., which covers 101 acres and employs about 3,000 men, it builds, besides automobiles, every known variety of horse drawn vehicles, from a light runabout to a 10-ton truck. Its long experience has placed it in a position to solve the problems of suitable body dimensions, correct weight, distribution and easy spring suspension, regardless of the load carried. Hence, these points, which have been frequently neglected in otherwise satisfactory automobiles, have received special attention in the Studebaker runabout. Owing to the successful spring suspension, there is a marked absence of sudden jolts and jars, even over rough pavements. It is said for this machine that it is the first electric automobile which can be run without discomfort to the

occupants at a good speed over ordinary city streets. As a result of long experience in carriage building, it would be expected that no detail would be overlooked in design and dimensions of the body. The important considerations of comfort in ample seat space and upholstery, in the right measurements for leg room and easy access, as well as elegance of lines, have all received special care.

The body is hung on a tubular frame, which is supported by two full elliptic springs on the rear axle, and two semi-elliptic springs on the front axle. The tubing in the main frame is all $1\frac{1}{2}$ inches in diameter. The side bars are of extra heavy gauge with re-enforcing pieces extending in a forward direction for five feet. All bearings, including those of the motor, are ball bearings, with balls, cups and cones of extra large dimensions. Every bearing is readily accessible for oiling, when needed. Side steering of the most simple and direct form is used. The wheels are wire suspension wheels, with special heavy spokes and construction. They are fitted with 3x30 inches double tube pneumatic tires. A complete tire repair outfit is furnished with each vehicle.

Twenty-four cells of the latest and most durable type of battery are used. The battery is arranged in two trays, each containing twelve cells, and can be conveniently removed from the rear of the body. These trays are supported by struts on the tubular frame, but the compartment has no floor, thus permitting ample ventilation. The battery will give a run of 40 miles on one charge over average streets and grades. It can be recharged from any 110-volt direct current lighting circuit, or one having a voltage as low as 70, which will give about 24 amperes. It is well-known that such direct current circuits are available and convenient in

practically every city and town having an electric lighting system. A charging plug and cable for making necessary connection are furnished with each vehicle. The motor is securely hung from two tubular cross bars and is located just forward of the battery compartment. It is thoroughly braced and cannot be displaced by any swinging of the vehicle in any direction. From the motor the power is transmitted by a roller bearing chain to the driving gear on the rear axle, which is "live." In the severe tests which the Studebaker company has made of its model vehicle during the past year, a chain has never been broken, and the same is true of the frame and all parts of the driving mechanism.

The controller is under the



Locomobile



STANLEY B. ARNOLD IN HIS LOCOMOBILE.

Chicago Automobile Club 100-MILE ENDURANCE RUN — **Two 100 per cent. Performances.**

Locomobile \$650 Model wins Blue Ribbon and 100 per cent. Certificate.

Locomobile Style No. 2, operated by Mr. Stanley Arnold, age 13, wins Blue Ribbon and 100 per cent. Certificate.

The *Locomobile* Company of America

7 EAST 42nd STREET, NEW YORK

1354 MICHIGAN AVENUE, CHICAGO



**Midgley
Tubular
Steel
Wheels.**

Artillery Pattern.

When in the market write the

**Midgley Manufacturing Co.
Columbus, Ohio.**

K. Franklin Peterson,
165 Lake Street, Chicago,
Western Sales Office.

The Actual Result.....

of the Chicago-Waukegan 100 mile endurance contest was to prove that the

Rambler

Can successfully compete with the \$2,000 and \$2,500 carriages for speed and service, on any kind of road. That it has a smaller fuel consumption per pound weight than any other carriage entered in the contest. That the RAMBLER system of cooling the engine is undeniably successful; it consumes absolutely no power, and requires less water than any other applied system. That it stands alone; no other carriage of its type and price is in its class.

**Compare the elapsed time of the three Ramblers with
any other carriage or carriages in the contest!**

If you would know more of the RAMBLER, send for Catalogue M-A; free on request.

THOMAS B. JEFFERY & CO., Kenosha, Wis.

seat, where it is readily accessible for examination and adjustment. Four speeds are provided of 3, 6, 9 and 13 miles per hour. These speeds are obtained forward or backward, the reversing being done by a lever operated by the driver's left foot. The advantage of four speeds, instead of the usual three, is a valuable one, as it makes it possible to avoid sudden and jerky movements. The Studebaker runabout starts quietly and easily, and further, will start from a stand-still on heavy roads, or will climb hills on the lower speeds. Each Studebaker runabout is equipped with two powerful and independent brakes, both foot controlled. The regular brake works on drums located on the rear axle, one drum being just inside of each of the rear axle bearings. The auxiliary brake is applied on a drum mounted on the end of the motor armature shaft.

The manufacturers state that this electric automobile has been built to meet the requirements, not only of pleasure riding, but also of all ordinary business service; that it is sold at a moderate price, and that the design and methods of suspension adopted have made it possible to use their machine with the least possible expense for maintenance and repairs. Beside the piano box runabout shown in the cut, this vehicle is furnished with either a trap or phaeton body. To all of these bodies tops can be applied.

RECENT ISSUES FROM THE PATENT OFFICE.

Nos. 705,176 and 705,177, to Chas. H. Wheeler and Franklin W. Kremer, of Akron, Ohio, said Wheeler assignor to the India Rubber Co., cover a tire for automobiles, the special feature of which is a metallic band covering the tread as a protection against puncture. This band is of crescent shape with outwardly flaring edges and is covered with an outer band of rubber or other flexible material. It is to be placed in position before the tire is inflated and is held in place principally by the inflation of the tube. The latter numbered patent is devoted to a slight modification of that covered by the former.

No. 705,302, to Harry Rose, of Utica, N. Y., assignor to the Remington Automobile & Motor Co. of same place, covers a controlling mechanism for the speed change gear. The device comprises a series of foot levers all on one shaft and connected with the mechanism of the various gears and the brake. The notable feature of the device is that there is a catch for holding one of the levers when in operative position while the others must be held in place by the operator and arrangement is made whereby putting one of the levers, other than the locked one, in operative position while the latter is locked will release the locked lever and a spring will return it to inoperative position before the other has moved far enough to become effective. It is the idea of the inventor that the speed used under normal conditions will be under control of the locked lever while the others being for temporary use will be held in position by the foot.

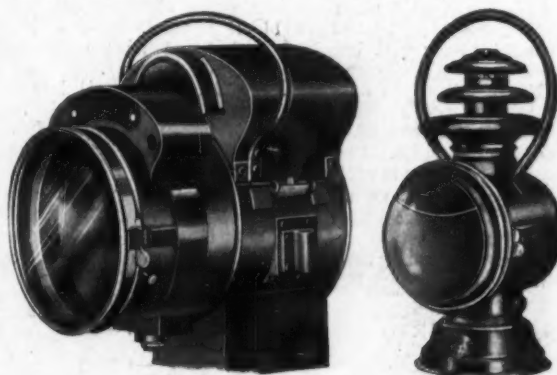
No. 705,402, to William C. Holloway, of Westminster, England, covers a folding vehicle body for automobiles. The rear portion of the body, back of the driver's seat, is formed similar to a brougham except that the upper portion may be folded and let down into a casing formed in the sides of the body proper. As described the folding portion of the body may be so constructed as to let down under its location when in use or it may be entirely removed and folded for storage in some other part of the vehicle.

No. 705,357, to Robert M. Keating, of Middletown, Conn., covers a combined mud-guard and muffler for motorcycles. In construction this comprises a cast portion to which connection with the motor is made, and a sheet metal extension, crescent form in section, with a series of transverse perforated partitions serving as

baffle plates. The claims are as broad as allowable but of course cover the device mainly in detail of construction and would probably not hold against a mud-guard muffler if the construction thereof was sufficiently at variance.

BIG SOLAR LINE FOR NEXT SEASON.

"Solar gas lamps show the way" is now a famous phrase, for the patented method of generating acetylene gas in portable lamps belongs exclusively to the Badger Brass Mfg. Co., of Kenosha, Wis., and after 6 years' constant experiment the company is convinced that no means has been found to compare with the original method of passing water through a wick to the carbide. This principle is used in every solar gas lamp, and every lamp is burned and tested at the factory before being shipped. The new member of the Solar lamp family will be known as the Phare Solar. It has been designed, built and is now offered the public as the most powerful light projector for use on automobiles. The following details and illustration will give the reader an idea of its appearance. The makers of these lamps have been continually experimenting with all the best makes of foreign and domestic gas lamps, by actual comparisons and tests made on the roads.



The Phare Solar

Solar Oil Lamp

These new lamps are of the famous artillery shape, made of extra heavy gauge brass, by skilled workmen, in a complete modern plant, built especially for making acetylene gas lamps. All parts are riveted where needed and particular attention is given to the finish. They have independent generators with the Solar patent water feed, and one key only controls water supply and turns on and off the gas. Generators can be instantly removed for cleaning and refilling without removing lamp from the irons. All essential parts are made in duplicate and are removable. One of the novel features of these lamps is that they will automatically generate enough gas for any size burner the owner may desire, from $\frac{1}{4}$ to one cubic foot of gas per hour. They are guaranteed to burn steadily and not to jar or blow out under any condition of speed, road or weather, and to "show the way" from 100 to 1,000 feet ahead of the machine. A large stock is now being made up and samples will be shown at the next European and American automobile shows. The price, large size, full brass, is \$40; large size, nickel and enamel, \$35; small size, full brass, \$30; small size, nickel and enamel, \$25.

Guided by an experience of 5 years, and at the solicitation of numerous customers, the Badger Brass Mfg. Co. has just gotten up and will market next season the Solar oil automobile lamps, description of which follows: They are of a striking design and eminently suited to the artistic tastes of the highest class purchasers. They are carefully built by skilled lamp makers, from the best quality of spun brass, all parts

being riveted where needed; are capable of withstanding the severest usage to which they are subjected, and are made and guaranteed to meet all requirements for their intended use, being proof against extinguishment by any condition of road or weather. Made in pairs, the left hand lamp being fitted with sectional green signal glass in front of lens. The lamps have double convex lens, ground and highly polished, not bent glass. The lenses are a particular feature of these lamps. Height



The Solar Baby

of lamp is 12 inches without bail; depth of body, 5 inches. Front is 6 inches diameter. The lamps are fitted with sockets for standard flat holders, have 1½-inch rear ruby jewels, removable doors, large oil capacity, the oil fount being easily removed for refilling; reflectors made of the finest quality cold rolled silver on copper, highly polished; are of the cold blast, central draught burning principle, burn kerosene and are fitted with bails which are recommended as convenient for hand lantern to inspect machine; price per pair, in full brass, \$25. The same style lamp as above described will also be supplied without green signal glass, finished in black enamel, with nickel trimmings and fitted with concavo-convex lens, at \$15 per pair.

For small types of autos, the Solar Baby oil lamps will be offered as per illustration. These are made in pairs to fit either round or flat irons. Finished in full brass with bails. Price per pair, \$7.50. This same style lamp fitted with socket on back and red glass front, to be used as a tail lamp, will be supplied at \$4 each. The entire line of new 1903 models will be completed by August 15 and from that time on a large force will be kept busy making same so that orders can be filled from stock by September 1.

EXPORTS OF CYCLES AND AUTOS.

Washington, D. C., Aug. 1.—The exports of bicycles and parts for June amounted to \$237,014, a gain of about \$600 over the same month of last year. For the 12 months ended with June the total was \$2,627,572, or about \$111,768 ahead of the same period last year. The exportation of automobiles and parts for June amounted to \$131,150 and for 12 months ended with June \$948,528.

Following is a list of exports of bicycles and automobiles for the week just ended from the port of New York:

Antwerp—Bicycle material, eight packages, \$355.
 Brazil—Bicycle material, three packages, \$184.
 British East Indies—Bicycles, twenty-seven packages, \$1,440; velocipedes, eight cases, \$79.
 British Australia—Bicycles and material, forty-eight cases, \$1,016.
 British West Indies—Bicycles, sixty-four packages, \$1,682; velocipedes, six cases, \$10.
 Cuba—Bicycles, three cases, \$365.
 Christiania—Bicycles, two cases, \$47; bicycle material, one package, \$35.
 Central America—Bicycles and material, two packages, \$33; tricycles, two cases, \$15.
 Copenhagen—Bicycle material, seventeen packages, \$940; bicycles, two packages, \$65.
 Danish West Indies—Bicycle material, two packages, \$17.
 Dutch West Indies—Bicycles and material, four packages, \$43.
 Dutch Guiana—Bicycles and material, thirteen packages, \$414.
 Dutch East Indies—Bicycle material, two packages, \$30.
 Ecuador—Tricycles, one case, \$100.
 Genoa—Bicycles and material, thirty-nine cases, \$1,736.
 Havre—Bicycles, 124 packages, \$1,760; bicycle material, forty-five cases, \$2,525.
 Hamburg—Bicycles, one package, \$30.
 Japan—Bicycle material, forty-five cases, \$1,404.
 Liverpool—Bicycles, 162 packages, \$2,305; bicycle material, six packages, \$269.
 London—Bicycles, three packages, \$115; bicycle material, seventy-four packages, \$4,462.

Lausanne—Bicycles and parts, two packages, \$35.
 New Zealand—Bicycles and material, eighty-four cases, \$3,869; velocipedes, eleven packages, \$110.
 Rotterdam—Bicycles and material, thirty-nine packages, \$1,245.
 San Domingo—Bicycle material and bicycles, one package, \$1,245.
 Southampton—Bicycle material, five packages, \$167.
 Stavanger—Bicycles, two cases, \$45.
 United States of Colombia—Bicycles and material, twenty packages, \$270.
 Uruguay—Bicycles, one package, \$45.
 British Australia—Auto vehicle material, one case, \$21.
 China—Auto vehicle, one package, \$650.
 Dutch East Indies—Motor vehicle, four cases, \$2,026.
 Glasgow—Auto vehicle, 2 cases, \$50.
 Japan—Auto vehicle, five cases, \$1,350.
 Liverpool—Auto vehicle, four cases, \$4,500.
 London—Auto vehicles and parts, thirty packages, \$14,924.
 Mexico—Auto vehicles, two cases, \$1,200.
 Philippine Islands—Auto vehicle, 1 crate, \$807.

TOURING CAR BY GROUT.

A new touring car recently built by Grout Bros., of Orange, Mass., developed nearly 20-horsepower and carries water and fuel for a 100-mile run, so arranged that a condenser can be used if necessary. It is equipped with steam air pump, steam water pump, hand and automatic lubricators, fire controlled from the seat, three separate burners, running one, two or three as operator desires, 84-inch wheel base, extra heavy springs. This model is so designed as to close up front when not in use. One feature of this wagon is that the forward



Grout Touring Car.

seat is below the operator's seat so that the operator can look over the heads of passengers, also making it handy in getting in and out. The rear has a concealed panel for tools and is also equipped with faucet, wash dish, towels and soap. Under the front seat it is divided into compartments for carriage of luggage. The picture shows C. F. Putnam, president of the Putnam Machine Co., of Fitchburg, Mass., with a party of gentlemen on a tour through the state, Mr. Putnam being the one on the left in the rear seat. This car has the qualities of all Grout cars, is capable of climbing all hills, and going over any roads at speed equal to the company's lighter cars.

KEROSENE BURNERS FOR TOLEDO CARRIAGES.

It has been known in the trade for many months that the International Motor Car Co., of Toledo, Ohio, has been conducting exhaustive experiments with the object of perfecting a satisfactory kerosene burner. We are now advised that the company is prepared to accept orders for Toledo steam carriages so equipped.

THE BRAZIER TOURING CAR

**Beats Them All
In Comfort and Durability**

We know what it will
stand, so guarantee a
maximum figure on
the repairs :: :: ::

Heavy Busses and
Business Wagons built
to order; some now
under construction ::

We handle Experimental Work

Send for Booklet

H. BARTOL BRAZIER,

Manufacturer of
Heavy Gasoline Vehicles

1811-13-15 FITZWATER ST
PHILADELPHIA, PA.



HAVE YOU SEEN ***The Spaulding Gasoline Runabout?***

**THE BIG HIT
OF THE
AUTOMOBILE
SHOW**

An everyday Automob-
ile for everybody.

Just the thing for pleas-
ure or business.



PRICE, \$650.00.

**SIMPLE
DURABLE
ECONOMICAL**

**200 MILES
ON ONE CHARGE
OF GASOLINE**

Most Liberal Terms to Agents.

Spaulding Automobile & Motor Co.
63 Chandler St., Buffalo, N. Y.

DURABLE

NO JARRING
NO STRAIN.

**DIAMOND
MOTOR VEHICLE
TIRES**

If you are contemplating
purchasing an automobile
the reliability of the machine
may be gauged correctly
if equipped with

DIAMOND TIRES

Write for valuable opinions of users

**THE DIAMOND RUBBER
CO.**

**AKRON,
OHIO.**

BRANCH STORES AND REPAIR STATIONS
215 W. 53rd St. New York City.
435 N. Broad St. Philadelphia.
74 Appleton St. Boston.
9 W. Seneca St. Buffalo.
431 Wabash Ave. Chicago.

THE CUSHION FRAME

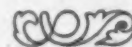
is as essential to comfort
as the

PNEUMATIC TIRE

and in time all bicycles should be
Cushion Frame bicycles, just as all
bicycles are now pneumatic tired
bicycles.

To Hasten That Happy Day

simply requires proper appreciation
and push on the part of the cycle
dealer. Cushion Frames are on
high grades only. That means a fair
profit for the dealer.



Hygienic Wheel Company

Owners of Cushion
Frame Patents.....

220 Broadway, NEW YORK.

Home Office, Philadelphia.

It seems that the most serious difficulty has been to overcome the noise caused by the rapidly vaporizing oil, and the offensive odor accompanying its combustion. The introduction of a proper vaporizing coil and nozzle has overcome these difficulties, and the arrangement, as now fitted, is noiseless in operation and good combustion prevents objectionable odors.

It has, of course, long been recognized that a satisfactory kerosene burner would solve many difficulties common to steam vehicles, and in particular the disadvantage of large fuel consumption. A theoretical advantage is that of safety, but accidents to well-made steam vehicles seem to be no more frequent than to those of other types, so the principal improvements are due to reduced operating expenses and to the increased facility with which kerosene may be procured. The feature of economy is important. The International Motor Car Co. states that Toledo steam carriages fitted with the new kerosene burners will travel 100 miles on 9 gallons of fuel. The required air pressure is much less than when gasoline is used for fuel, 30 pounds pressure being ample. An interesting feature is the announcement that Toledo steam carriages will be fitted, if desired, with kerosene burners at no additional cost to the purchaser.

Bray Company's Line of Jacks.

There is possibly nothing more essential for the automobile tool box than a good jack. It is as much a necessity as the wrench or oil can, so much so that several manufacturers have provided receptacles in their machines for the tool. In many of the more advanced stables where particular care is taken of the vehicles, the automobiles are lifted clear of the floor when they are brought in at night, by four jacks, so as to ease the tires of the weight, and thus lengthen their life. For this purpose one New York salesroom supplies four jacks with every machine sold. Realizing the importance of this class of trade the Bray Mfg. Co., of 115 Broadway, New York, has introduced a line of automobile jacks known as the "B B" brand, which will interest every manufacturer and owner. They range in price from \$1.75 to \$14, according to their capacity. The one known as No. 2, which is illustrated here, will lift any vehicle up to 3,000 lbs. and lists at \$3.00. It is made of the best iron and steel, with ball bearings, and can be adjusted quickly.



Pierce Motorette in Chicago Run.

Supplementing the recent New York 100-mile endurance test, the Pierce Motorette again comes to the front, this time in the Chicago 100-mile endurance run of Saturday last. The gasoline consumption on the New York run was 4 gallons, or 0.04 gallons per mile; on the Chicago trip the consumption was only 3½ gallons, and on far rougher roads than the New York run, making a gasoline consumption of only 0.032 gallons per mile. On account of the extremely narrow track of this machine, about 42 inches only, the operator was enabled to keep out the deep ruts in the roads, at different points in the course. The machine is equipped with a 3½ horsepower genuine De Dion-Bouton air-cooled motor, which has a normal speed of 1,600 revolutions per minute. It has a two forward and reverse speed gear of the sun and planet type, which is exceedingly simple and compact. Taking everything into consideration, this little midget made a remarkable showing, as compared with some of its weighty competitors with nearly five times the horsepower. Percy P. Pierce was award-

ed a 100 per cent mark, a blue ribbon and a silver cup, the judges pronouncing his work "a perfect performance."

Record of the Locomobile.

There was a time when the officials of the Chicago test were convinced that there would be no entries of steam carriages. Eventually three Locomobiles and one White were entered. The latter did not start. One of the Locos turned back at the first control. The others finished—one of them with a grand record, having traveled the last 40 miles without a stop for gasoline or water. The two were awarded 100 per cent apiece—not a bad record in view of the fact that of the remaining twenty-six entries only seven won blue ribbons. The Locomobile people are, naturally, proud of the performance of S. B. Arnold, the 13-year-old operator whose picture appeared recently in MOTOR AGE. Though several stops were made none of them, according to the observer, was penalized. As to C. Arthur Benjamin, the "boy wonder of Syracuse," everyone expects him to get through on time and, to his credit be it said, he rarely fails.

Willard Introduces New Batteries.

The Willard Storage Battery Co., which has succeeded Sipe & Sigler, Cleveland, has brought out a new storage battery especially designed for electric automobiles. It is lighter than the old battery and is claimed to be 30 per cent more efficient, weight for weight. With the aid of a newly patented separator, it is claimed all possibility of short circuit is eliminated. The battery is made in the following sizes: No. 2000, 9½ amperes for 4 hours, 12 pounds; No. 2005, 13½ amperes for 4 hours, 15 pounds; No. 2007, 20 amperes for 4 hours, 20½ pounds; No. 2009, 26 amperes for 4 hours, 26 pounds; No. 2011, 32 amperes for 4 hours, 31½ pounds; No. 2013, 38 amperes for 4 hours, 37 pounds. The Willard company has lately improved its facilities and processes of manufacture and it now claims the most efficient and durable battery on the market.

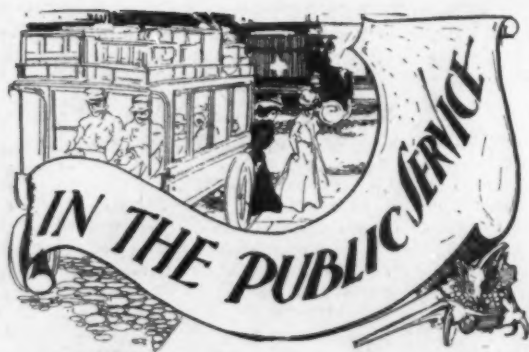
Hicks Now Seeking Capital.

The Northwestern Automobile Co., with a factory at 63d street and Howard avenue, with capital stock of \$5,000,000, and with which John A. Drake is said to be connected, is advertising for capital to manufacture under the Hicks patents, reference to which has been made more than once in MOTOR AGE. Mr. Hicks was the designer of the famous Hicks stock car and invented the Rexcycle, a three wheeled device which failed to achieve distinction. The prominent feature of his automobile is a fifth wheel, to which the power is applied. The plan was tried in France 10 years ago.

Legal Formalities Nearing a Close.

A bid of \$100,000 having been made for the property and assets of the Automobile Co. of America, creditors have been notified to appear before a master in chancery and show cause why the bid should not be accepted. This move is, of course, only one of the legal formalities in the company's preparation for the removal of the receiver. It is understood that none of the creditors of the old concern will suffer any loss through the proceedings which the present officers of the company were forced to take by events which transpired prior to their assuming control.

Mayor Finer, of Waukegan, Ill., is entitled to a vote of thanks for having vetoed an ordinance, passed by the council, limiting the speed of automobiles to 8 miles an hour.



ESTABLISHMENT OF STAGE LINES.

The progress being made in a most important branch of the automobile industry—that of adapting motor vehicles to business purposes—is illustrated in the increasing number of automobile coach lines established in various parts of the country, says the *New York Times*. Some of these are old established lines, which heretofore have used horses, but many others are new lines starting into a business which has been made possible only by the development of the automobile for use where the slower horse-drawn vehicle could not have been operated successfully.

Such, for example, is the automobile stage service from this city to Coney Island and the similar line up the Hudson Valley to Tarrytown. In Indiana a service is running between Terre Haute and Brazil. In New Jersey a line between Mount Holly and Burlington has been established. A line between Rhinebeck and Rhinecliff, in this state, is in successful operation. The list might be largely extended. Even such ambitious undertakings as lines which shall run in competition with established steam or electric roads have been planned to carry both passengers and freight, and may become commercial possibilities before long.

The time seems not far distant when a traveler over any principal route in the thickly populated parts of the east at least will have a choice of travel by either railway or automobile. And for the leisurely tourist the automobile trip, in pleasant weather, with its freedom from smoke and cinders, and its opportunities for viewing the country, would easily be the favorite.

TO OPEN MINING COUNTRY.

The Clifton Copper Belt Mining Co., which owns mines in the Clifton mining district, Deep Creek, Utah, and whose offices are at 65 West Second South street, Salt Lake City, expects to be instrumental in the incorporation of a company to operate a line of automobiles between its offices and the mine. The distance is 180 miles and the route would pass through a number of promising mining camps. Deep Creek is a wonderfully rich mineral section, but is from 65 to 90 miles from a railroad. Senator Clark's new road, the San Pedro, Los Angeles & Salt Lake railway, and a new road to be built from Denver to San Francisco will both pass through the Deep Creek country, but while these are building there will be heavy passenger traffic and a demand for conveyances. The mining company believes that automobiles will furnish the best and quickest method of transportation.

The route will pass over what is described in all our geographies as "the great American desert," but as a matter of fact the road is exceptionally good, having light grades and little sand. Frank L. Wilson, secretary and treasurer of the mining company, expresses the belief that it would be hard to find a better road in any part of the country. "I believe," said he, in a letter to *MOTOR AGE*, "that the automobile will in time replace the old stages now running in this western

country, and will be the means of opening up and developing a great many rich mining camps that are now too remote from railroad transportation to attract the attention of capitalists." Mr. Wilson promises to furnish details of developments as they occur.

CHEAPER VEHICLES ARE DEMANDED.

Inquiries made by C. F. Ray & Co., of Pueblo, Colo., recently led to a report that an automobile company had been organized in that city to operate a stage line. The fact is that Mr. Ray has made inquiries for prices of machines, with a view to operating them between Pueblo and Beulah, a summer resort about 30 miles away, in the foothills of the Rocky Mountains. No company has been organized, however, the inquiries being preliminary to the formation of a company if the gentlemen interested can settle upon a desirable and practicable motor carriage which will carry not less than a dozen passengers, climb the grades, stand the rough roads and be reasonable in price.

Mr. Ray's efforts have not been entirely satisfactory, and as the season is so far advanced he has decided to let the matter drop until next winter. "By that time," he says, "perhaps Mr. Edison will have so far perfected his promised cheap storage battery that we can purchase a twelve or fifteen passenger vehicle that will do our work at from \$1,000 to \$1,250. The price asked us for a twelve-passenger vehicle ranges from \$2,000 to \$2,200 and seems unreasonable. If you can put us in touch with a vehicle that can stand rough roads, climb steep grades and be able to make from 65 to 75 miles a day and be counted on to do this every day during the season of not less than 120 days, barring, of course, minor accidents, and which can be bought for \$1,500 or less, we should be glad to have you do so."

Mr. Ray's reference to the Edison battery furnishes one more proof of the amount of injury done to the industry by the irrational reports published by the daily papers.

MOUNT HOLLY, N. J.—The South Jersey Mobile Co. will open a steam wagon line between Holly Beach and Angelsea.

SEYMOUR, IND.—Capitalists are expecting to establish an automobile line leading from this city to every township in the county. A dozen automobiles will probably be used and merchants will co-operate by giving fare rebates to all who purchase goods to a certain amount. Later a daily delivery of goods to the country folks may be tried.

ASHLEY, IND.—A number of Auburn capitalists have organized an automobile company to carry passengers from Waterloo to Garrett via Auburn. They will put on a number of vehicles.

Kelecom Motors Win European Honors.

New York, Aug. 6.—In the recent race meet of the Automobile Club de Mamer-Luxemburg, Belgium, three motor bicycles fitted with 2½ horsepower Kelecom motors won first, third and sixth prizes in a field of ten starters. The course was up hill 8 per cent to 10 per cent grade and the time made by the Kelecom was at the rate of 41 kil. 940 meters per hour (26 miles). In the second race, with flying start, the Kelecom captured second, third, fourth and fifth places in a field of nine, and at a speed of 66 kil. 960 meters per hour (41½ miles), only being beaten by a bicycle with a 4½ horsepower motor. The Kelecom motor is controlled in this country by A. H. Funke, of 101 Duane street, New York. In a few days Mr. Funke expects to be able to make deliveries on a complete motor bicycle fitted with this well known motor.

The Hardy Motor Works, Port Huron, Mich., is building a self-contained upright motor for stationary work that is meeting with marked approval for farm and shop work. The motor is small, compact and of high power considering its size, and sells at a moderate figure.

4 "B. B." JACKS

WILL COST A TRIFLE, BUT MAKE YOUR



Tires Last Twice as Long

An Automobile Necessity:
The B. B. Jack.



THE BRAY MFG. CO., 115 Broadway, N. Y.

FACTORY, NEWARK, N. J.

"THE STUDEBAKER"

Pilotlight and Generator

"The Burnell Burner"

NEW PRINCIPLE



THIS MAY INTEREST YOU.

One Minute Generator, Quick, Safe and Lasting

No liquid gasoline used in generating, no clogging, never blows out, no liquid gasoline can pour into main burner. Self-cleaning needles on pilot flame and main fire feed. Can leave carriage stand any length of time, ready to go at once. Guaranteed perfectly safe. Weight one and one-quarter pounds. The only generator ever made that does perfect work.

Burner will hold steam pressure on automatic cut-off on any carriage. Ten to fifteen more miles with every five gallons of fuel. Self-cleaning. Will outlast your carriage. No fire blowing out of bottom of burner. Can not warp, crack, leak or burn out. Goods sold on strict guarantee to do "THE BUSINESS."

If your dealer can not furnish you write us.

What a STANDARD OIL MAN Says.

(From original letter)

STANDARD OIL COMPANY SALES DEPARTMENT.

The Studebaker-Burnell Co., 38 Maple St.

Bradley Street Station.

GENTLEMEN:—Enclosed please find my check for Sixty dollars (\$60) as payment for burner and generator attached to my Locomobile. I cheerfully pay this bill as I am satisfied that it will do all you claim, and will say that it will do more, as you claim it is a fuel saver as well as a powerful burner. My Loco will run from ten to fifteen miles further on five gallons of gasoline than my old burner. The generator and pilot light works perfectly, and I would not part with it at any price.

Yours truly,
B. P. SPIEGLER.

17 Bradley Street, Chicago.

Manufactured by **THE STUDEBAKER-BURNELL CO.**
38 Maple St., CHICAGO, U. S. A.

1903

1903

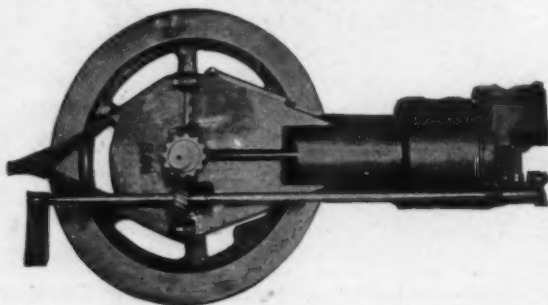
THOR

COASTER BRAKE

The above announcement is enough.
 The trade realize that Thor standard means:
 The simplest, most practical and durable in existence.
 The samples are ready of a Brake that is right at last!

AURORA AUTOMATIC MACHINERY CO.
AURORA, ILLINOIS.

Brandenburg Bros. & Alliger, Sole Salesmen, 85 Lake St., Chicago; 103 Reade St., New York.



"Ask Dasey."

NOTHING FANCY NOR ELABORATE
 BUT JUST A PLAIN, WELL-MADE,
 4½x6 INCH. * * * * *

Run About Engine

.....AT.....

\$100.00 for Engine alone.
 137.50 with Accessories.
 160.00 for Engine and Champion Transmission
 Clutch.
 197.50 for Engine, Transmission and Accessories.

We have engines ready for immediate delivery. * Can ship same day as order is received. * Our
 equipment includes Dow coils, plugs, batteries, Wilcox float carbureter and Loomis Muffler. * Where
 can you find a better outfit at the price? * **CIRCULAR MATTER READY SOON.** * We are
 ready to contract with manufacturers for 1903 deliveries. * * * * *

THE P. J. DASEY CO.

19-21 La Salle St., - - - CHICAGO, ILL., U. S. A.

C. V. DASEY, { 1536 Champa St., } Western Representative.
 DENVER, COL. }



THE CYCLE AGE

As was expected the results of the Ottawa meet caused quite a shake up among Kramer's pursuers for the championship. Major Taylor is now within striking distance of the runners up and before another

week may possibly pass them and be in second place. Kramer had scored thirty points when Taylor started on the circuit. Since then Kramer has won eighteen points and Taylor nine through a second at Washington, a fourth at Vailsburg and a first at Ottawa on Saturday. The last named race was at a quarter of a mile. Taylor abandoned his hanging back tactics, jumped out in front and Kramer never got by him. The major was excused from Friday's race at Ottawa, as he had previous engagements with Fenn at Hartford, which rain had postponed. Both attempts at running the circuit meet at New Haven last week had to be postponed, owing to rain.

Collett's two scorings at Ottawa placed him even with Kimble for second place, and it now looks as though the battle would be fought out by him, Kramer and Taylor, as Lawson, Fisher, Kimble and the others do not seem to be riding in the same class with these three.

The standing of the men up to and including Saturday's racing at Ottawa, on a basis of five points for first, three for second, two for third and one for fourth, with double points in national championship races, follows.

Name.	First.	Second.	Third.	Fourth.	Points.
Kramer	8	1	0	0	48
Kimble	0	2	2	2	15
Collett	0	2	3	2	15
Lawson	0	3	1	2	13
Taylor	1	1	0	1	9
Fisher	0	0	1	0	4
Wilson	0	0	1	1	3
Bald	0	0	1	0	2
Schrelber	0	0	0	1	1

The circuit followers will race at Buffalo on Thursday and at Manhattan Beach on Saturday. At the former meet the 5-mile national championship will be run. The contest at the beach will be at a third of a mile.

THOR COASTER BRAKE.

An announcement that will undoubtedly be, of great interest to the cycle trade for the coming season has been made. The Aurora Automatic Machinery Co., maker of the famous Thor hubs, fittings, etc., which are well known throughout the world, has for the past 4 or 5 years been investigating all the coaster brakes placed on the market. The company, however, was unable to find anything that would, in its judgment, be safe for it to put out under its name and guarantee, until about 8 months ago. After exhaustive tests covering this period, it has secured a brake that it knows to be up to its standard of excellence. The cycle trade will

know, from the very beginning, that a Thor coaster brake, backed by the Aurora Automatic Machinery Co., will inspire confidence, and will insure its sale in large quantities. The brake looks very much like the regular Thor hubs, being difficult to distinguish therefrom. It is simple in construction and very few pieces enter into the mechanism. So simple is it that it can be taken apart and put together by anyone. There is no pressure on the bearing parts when the brake is in use. It is a perfectly free coaster and a positive brake. Brandenburg Bros. & Alliger, 85 Lake St., Chicago, and 103 Reade St., New York, who are the general salesmen, are ready to show samples.

DENVER DEALERS' STRENUOUS ACTION.

The Denver Bicycle Repairers' Association has shown that it objects strenuously to infractions of its rules. At a meeting on July 30 it revoked the membership of Brown & Beck on account of their alleged "continued practice and avowed purpose of price cutting and of supplying others with the same purpose in view." Attached to the notice of this action is the following special notice to manufacturers and jobbers: "In justice to the legitimate supply houses of Denver, as well as all manufacturers of staple bicycle supplies, sundries, etc., the members of the Denver Bicycle Repairers' Association (who do 95 per cent of the bicycle and repair business in Denver) desire to call to your notice that they have agreed to refrain as far as possible from buying or selling goods made by manufacturers whose products are handled by Brown & Beck, or the Royal-Clark Supply Co. (successor to the Bicycle Supply Co.) of Denver.

WALTHOUR'S NEW RECORDS AT MANHATTAN.

New York, Aug. 4.—Absences ruined the proposed big four-cornered paced match at 20 miles at Manhattan Beach Saturday. Elkes had been hurt at Boston, and word came that Champion was ill, though the wise-aces called it "heart failure," Elkes having beaten the Parisian twice and Walthour having taken all his Manhattan Beach records from him. Walthour and McFarland alone of the original quartette faced the starter. Freeman was added. It was a mere time trial for Walthour, and the southerner took advantage of it and following his marvelously made-over Metz Orient motor, put up an entirely new set of track figures. He scored a record of 1:25 for the first mile and wiped this out in the thirteenth and sixteenth miles with 1:23 1-5.

The 20 miles was covered in 28:14 3-5, as against his own track record of 28:52 2-5, made the previous Saturday.

McFarland got by Freeman in the second mile and led him until the tenth, when his tandem began to buck and he fell behind. Freeman rode the distance in 29:09 3-5.

John Wyckoff (Orient) won the 5-mile motor cycle race, which had six starters, and has become a feature of the Manhattan meets. His time was 7:32 4-5. S. W. Anderson (Orient) was second and E. L. Ferguson (Orient) was third. Hurley made a close win of the half-

mile open by a brilliant run through the ruck up the stretch, with Losee second, Billington third and Glasson fourth. Thanks to Glasson's closing the gap, Hurley also won the 2-mile handicap in 4:33 2-5, with Losee (75) second, Glasson (scratch) third and Winton (150) fourth.

CLEMENT TO MANUFACTURE AT HARTFORD.

Hartford, Conn., July 31.—The French Clement motor is to be manufactured in Hartford. William G. Allen has been appointed general manager of the company for this country and has begun operations in the old Acme Machine Screw Works in Sheldon street. New machinery is being installed for the work and it is expected that the motors will be ready for the American market by the first of next year. A large force of men will be put to work when arrangements are completed and it is expected that the industry will develop into a large one for Hartford.

During the past week one of the motors, weighing about 25 pounds, and attached to an ordinary road bicycle, has been operated on the streets by A. B. Henley, an expert formerly in the employ of the Pope Mfg. Co., and later the American Bicycle Co. Mr. Henley has made trips of 80 miles and more about Hartford, maintaining a good rate of speed and experiencing no trouble with the mechanism. The motor is operated by gasoline and one filling of the three-quarter gallon tank will run the machine for 80 miles. The mechanism is simple and compact and one of its beauties is that the bicycle and motor together weigh about 55 pounds, and if an accident is met with on the road the operator can detach the small belt, put it in his pocket and pedal home. The new company will be known as the Clement Cycle Motor & Light Carriage Co.

SUNDAY RACING AT VAILSBURG.

Newark, N. J., Aug 3.—This was an off day at Vailsburg, so far as the professionals went, as the championship candidates were away at Ottawa. A mile race with lap prizes was put on for the stay-at-homes. The going was very fast, McFarland winning in 1:57 1-5, with Reltz second, Floyd Krebs third, and Freeman fourth.

Joe Rockowitz rode unpaced half a lap ahead of the bunch for 5 miles in the 20-mile amateur open. He was gathered in on the last lap, but won a bicycle as a lap prize by way of consolation. Schlee won in 48:10 2-5, with Dove second, Zanes third, Billington fourth, and Goerke fifth. Billington led at 5 miles, Glasson at ten, and Goerke at fifteen.

Hurley did not start in the long race and sat up in the final of the half mile handicap, to fool a bunch looking for a sleigh ride. Coffey (30) won in 59 4-5, with Losee (scratch) second, and Zanes (25) third.

FORTY-FOUR MILES IN AN HOUR.

Paris, July 2 (Special correspondence).—Seventy-three kilometers, 350 meters, or 44 1/2 miles, inside of an hour is the latest achievement of the old war horse Tom Linton, who many had ranked among the "has beens." The feat was accomplished on July 20 on the Buffalo track, which has made good the claim of its management that it is the fastest surface on this side of the Atlantic. The Linton-Bouhours match was the occasion of the performance, but the event proved a mere walk over, or perhaps it would be more correct to say fly over, the Frenchman being in trouble with his pacing machine quite early and giving up a useless struggle, thus clearing the track for his rival who, paced by that demon motor cyclist, bowled over the records with consummate ease and might have comfortably added another mile

to his total had he been pressed or had the track been perfectly dry. A grand ovation from the spectators greeted the sensational performance.

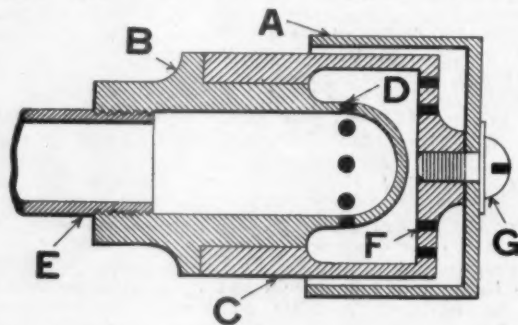
Linton is to make another trial at the hour record. Given favorable conditions he is confident of his ability to raise the record to 75 kilometers, or 46 miles. With the midget Michael training assiduously at Autenil and Bouhours and Robl eager to regain their laurels, where will the record be when the season is over? Surely 50 miles in an hour does not seem as near an impossibility as one would have imagined a few months ago.

The sprinters are scattered all over the continent. Rutt won the Leipzig grand prize and Ellegaard annexed the Copenhagen grand prize a few days later.

Road racing will monopolize our attention in the near future. The second Bordeaux-Paris race is to come off Saturday and Sunday next with a fine list of entries. Lesna is a general favorite.

COMPACT MUFFLER FOR MOTOR BICYCLE.

The accompanying drawing shows a new type of muffler intended especially for use on a bicycle motor. It is only 3 1/4 inches long over all, and 2 1/4 inches wide at its largest diameter, and is certainly very simple



and compact. It is claimed to be practically noiseless and with but slight back pressure. In the drawing E shows the exhaust pipe connection from the motor. It may be threaded for either 1/2 or 1 inch pipe. The base B has a round or semispherical portion with outlet holes shown at D. A chamber C surrounds the base B as shown, and has also outlet openings F, but of a greater number and of smaller diameter than the openings D in the base B. The annular casing A is secured to the chamber C by means of a screw as shown, and has a clearance around the same of about 1-16 of an inch. The chamber C and base B can be made from nice smooth iron castings, and the casing A of brass or bronze.

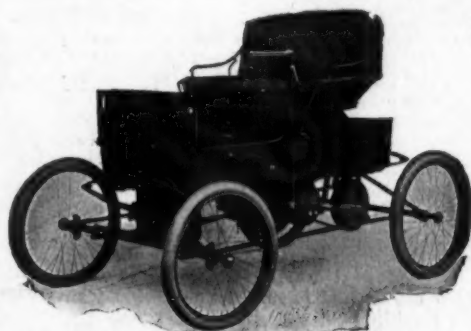
Kramer Beaten by Taylor.

Ottawa, Ont., Aug. 2.—At the bicycle races today Major Taylor scored his first victory over Frank Kramer. The event was the final heat of the quarter-mile championship, Taylor leading from start to finish and winning in 32 4-5s. In a 10-mile race for professionals, G. S. Schreiber was first, J. B. Bowler, of Chicago, second, and Martin, of Australia, third. The time was 22m. 30 3-5s., and it is said that new records were established from 3 miles upward.

Taylor Offers Match, Kramer Weakens.

Since his return to this country Major Taylor has been subjected to the usual discourtesies at hotels and among the racing men on account of his color. Taylor apparently realizes that combinations will be formed against him and that he has little chance of capturing

THE ORIENT RUNABOUT



MODEL 1902.

8 H. P.

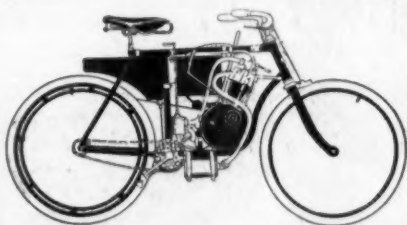
PRICE, \$875.

Powerful, Practical and Reliable.

All ordinary hills can be ridden on the high speed without the use of gearing. Speed controlled from 4 to 25 miles per hour, simply by pressure of toe on the throttle. Will climb 25 per cent. grade with two persons. :: :: :: :: :: :: ::

Write for Catalogue. * * Agents Wanted.

WALTHAM MFG. CO.,
WALTHAM, MASS.



ORIENT MOTOR BICYCLE

PRICE
\$250.00

Fitted with the New Orient 3 H. P. Motor.

Speed over 40 miles per hour.

The Most Powerful Motor Bicycle in the World.

Write for particulars. Agents wanted.

WALTHAM MFG. CO.,
WALTHAM, MASS.



"RUBBER NECK" GENTS'.

Dimensions—Length, 9 inches; Width, 7½ inches.



"RUBBER NECK" RACER.

Dimensions—Length, 11 inches; Width, 7½ inches.

Why sell cheap stuff and make but a bare living?

Sell "Rubber Neck" Saddles and swell your bank account.

All our "Rubber Neck" Saddles are built on strong steel foundation plates which are stamped to form, and the edges are cloth lined. The patented rubber cushions are connected to these plates, and then artistically covered with select number one stock of soft leather in standard colors. Sewing is even and firm, and the edge stained, rubbed and polished. We make six styles of Rubber Neck Saddles.

Send for complete Catalogue of Saddles, Tool Bags, Tourist Cases, Saddle Springs, Saddle Clamps, etc., also for Hangers of "Rubber Neck" Saddles.

The Bunker Saddle Co.

CHICAGO, ILL.

the championship. He has therefore offered to race Kramer for \$500, the winner to take the entire stake and gate receipts. Kramer, however, refuses to ride unless the proceeds are divided.

Miscellaneous Cycling Notes.

According to a report from New York "a change in the management of the American Bicycle Co. has been arranged for and a strong Wall street house has brought the matter about and is the coming sponsor for the adjustment of the finances of the company. Colonel Albert A. Pope, well known in the trade for the success of his bicycle manufactories, will succeed R. L. Coleman as president. A number of other changes in the board of directors will also be made. Colonel Pope believes there is great profit in the American Bicycle Co. if properly managed, and he has impressed his views upon strong financial interests who have invested largely in the securities of the company because of his proposed entrance into the management."

The annual "Wheel About the Hub" of the Boston Bicycle Club, the oldest club in America, will occur on Friday and Saturday, Sept. 12 and 13. The invitations have been sent out to the men who were once leaders of cycling in this country, and there is no doubt but that the trip will be as enjoyable as ever. The committee in charge of the event this year consists of Dr. W. G. Kendall, J. J. Fecitt and W. B. Everett.

A motor cycle road race will be one of the principal features of the annual picnic of the Minneapolis Cycle Trade Association, which will be held at Excelsior Thursday. The race will start from Wood's pavilion at Lake Calhoun, and the finish will be at Excelsior. All motor cyclists are invited to enter the contest.

At the Crystal palace in Leipzig, on Oct. 18 to 27, there is to be held an exposition of the progress in the construction of automobiles, bicycles, typewriters and other products of mechanical ingenuity, open to manufacturers and inventors of all nations. The classification of exhibits is in three main sections: 1. Automobiles and motor bicycles. 2. Bicycles. 3. Typewriters, etc. The motor bicycles are classed with automobiles and not with bicycles.

O. L. Pickard and G. W. Sherman, both of whom were among the finishers in the recent Boston to New York motor cycle run, will shortly start in an attempt to make a record between New York and Chicago, by way of Buffalo.

The motor cyclists of Minneapolis have arranged to hold a meeting this week to discuss the formation of a club.

The League of American Wheelmen has decided that motor cyclists are eligible to membership and the executive committee has pledged the league to secure for them the same rights and privileges as those who use bicycles of the old style.

New Incorporations and Enterprises.

MIDDLEBORO, MASS.—C. W. Maxim will remove his business from the present site to the shoe factory formerly occupied by the Hathaway, Soule & Harrington Co. He will engage in the manufacture of automobiles.

CHICAGO, ILL.—Woods Motor Vehicle Co., incorporated; capital \$150,000; to manufacture automobiles and other vehicles.

BARBERTON, O.—An automobile factory is in prospect for Barberton. A meeting will be held this week to arrange for the incorporation of the company which will engage in this business. Akron and Barberton men are interested. An improved machine will be manufactured.

AKRON, O.—The Goodyear Tire & Rubber Co. has taken out a permit at the city clerk's office to build the large addition to its plant that has been talked of for some time. Work will be commenced on it next week.

TOWANDA, N. Y.—Towanda Motor Vehicle Co.; capital \$25,000.

NEW CONCORD, O.—The New Concord Automobile Co. has

been incorporated at Columbus with a capital stock of \$50,000. The incorporators are: H. L. Warner, M. E. Dayton, O.; J. M. Ickes, Newark, O.; D. S. Burt, Byesville, O.; L. C. Taylor and John S. Black, Cambridge, O. The contract for the erection of the plant has been let to Burt & Bodine, contractors, of Cambridge, and the grounds have been laid off preparatory to beginning work at once.

JACKSON, MICH.—The Jackson Automobile Co., capital \$24,000, has filed articles of incorporation with the secretary of state. There are but three stockholders—George A. Matthews, president of the Fuller Buggy Co.; Charles A. Lewis, of the Lewis Spring & Axle Works, and B. J. Carter, who is the practical auto builder. They hold all the stock, there being none for sale.

From Chicago to Minneapolis.

Among recent visitors at the Chicago club house were Harry E. and Ralph Wilcox and A. C. Bennett, of Minneapolis. They came to Chicago to receive a Winton touring car which they drove to Minneapolis. The party had a good deal of fun at the expense of villagers. After a crowd had gathered one of the men would rise in the machine and explain to the people that they were introducing a new and valuable patent medicine. Then just as he reached the part where the medicine should have been produced the machine would be started and be far up the road before the startled villagers recognized that they had been fooled.

Kansans Partial to Oldsmobiles.

"We send you," writes J. A. Mosher, of Burlington, Kan., "a kodak picture of a group of typical Kansas girls and the type of automobile mostly used in this



Typical Kansas Group.

state, which, as you will see, is an Olds. This vehicle has been used for several months over some of our worst Kansas roads, with practically no trouble and without repairs."

Pat Hussey, formerly with the Davis Sewing Machine Co., of Dayton, O., and at present with the Snell Cycle Fittings Co., of Toledo, has tendered his resignation, to take effect the last day of this month. He is to go to Detroit to take a position with the Ford Automobile Co. He retains his interest, however, in the handle bar business, and intends also to manufacture two or three articles for the trade, including radiators.

WHEN ORDERING AN AUTOMOBILE SPECIFY THE "Exide" BATTERY

NEW YORK, 148 West 18th street,
PHILADELPHIA, 260 N. Broad street,
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EXIDE BATTERY DEPOTS
For Furnishing, Charging and Caring
for Exide Batteries.

CHICAGO, 364 Michigan Boulevard,
ST. LOUIS, 397 Olive Street.
OTHER STATIONS WILL BE ANNOUNCED LATER.

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PHILADELPHIA,
Alleghany Ave. & 10th St.
CLEVELAND,
New England Bldg.

NEW YORK,
100 Broadway.
ST. LOUIS,
Wainwright Bldg.

BOSTON,
60 State St.
SAN FRANCISCO,
Nevada Block.

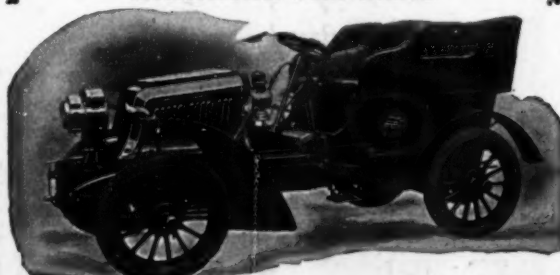
CHICAGO,
Marquette Bldg.
DETROIT,
101 Woodward Ave.

BALTIMORE,
Continental Trust Bldg.
HAVANA, CUBA,
G. F. Greenwood, Mgr., 34 Empedrado St.

GASMOBILES.

American Built. Immediate Deliveries.

Look up our record—First Prizes
and Blue Ribbons Wherever shown.



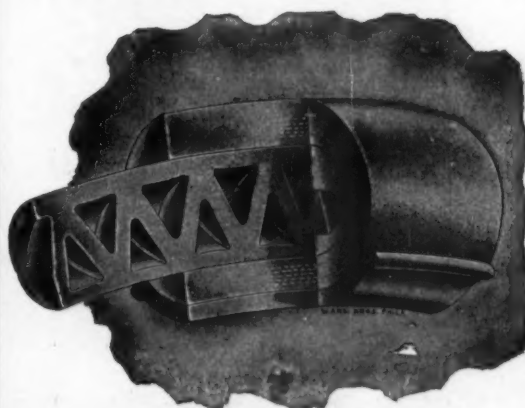
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Strong and Simple Construction.
Three and Four Cylinders.
Best Type of Ignition.
Latest Style of Ignitors.
Easy to Control; Always Reliable.
Prices to Suit the Purchaser.
Best Hill Climbers Built.
We Invite Inspection.
Send for Descriptive Bulletins.

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Beasley Elastic Tire



Built on the truss principle, it's strong and the
strain is equally distributed.
Ample resilient yet defies destruction or disabling
by puncture.
Can be used until completely worn out.

Standard Anti-Friction Equipment Co.,

No. 50 Broadway, NEW YORK CITY.

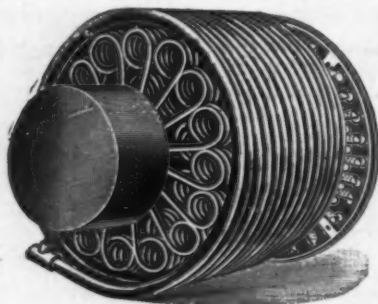
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must be heavily built if it is to be satisfactory.
Experience has put the minimum weight at 1,200
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Dealers wanted to represent us.

INTERNATIONAL MOTOR CAR CO., Toledo, Ohio.





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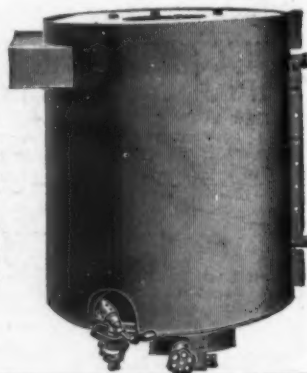
Cannot burn out. :: Safe and Reliable. ::
The quickest generator of steam. :: Made
in 6 to 100 H. P. :: Requires less space for
given capacity than any other boiler. :: ::

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IF YOU ARE CONTEMPLATING A TRIP, ANY PORTION OF WHICH CAN BE MADE OVER THE CHICAGO & ALTON, IT WILL PAY YOU TO WRITE TO THE UNDER-SIGNED FOR RATES, MAPS, TIME-TABLES, ETC.

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50% of all the
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Autos are

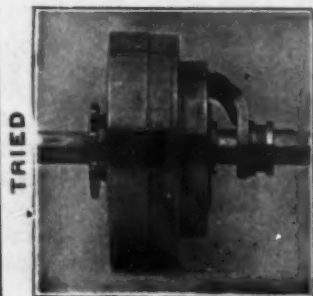
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Because experience has proven that they are beyond question the best engine made. Our catalogue telling you all about them will be sent free.

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No. 158 Summer St., Boston.



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100% EFFICIENCY

is what every one is looking for in a transmission gear.

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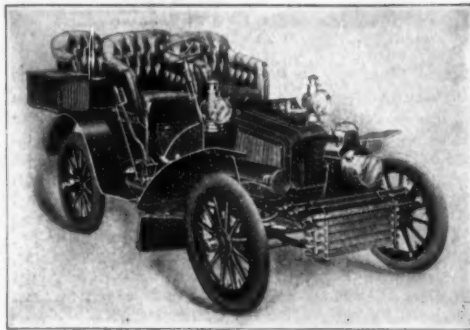
comes nearer to giving the desired results than any other form of clutch made. It can be demonstrated at any time, any place or on any engine. :: Results are what you want—must have in fact, and our clutches will give results, satisfactory in all respects. :: Micrometer measurements are used throughout and all parts are interchangeable.

THE CHAMPION MANUFACTURING CO.

479 HANCOCK STREET, BROOKLYN, N. Y.

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THE P. J. DASEY CO., 19 & 21 LaSalle St., Chicago. A. L. DYKE, 1402 Pine St., St. Louis



Style F, 16 H. P. with removable Tonneau.

The Peerless Touring Car

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BANKER BROTHERS COMPANY,
Agents for Pennsylvania.
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PHILADELPHIA—Broad & Vine Sts.
NEW YORK CITY—Banker Brothers
Company, 260 West 80th St.
DETROIT, MICH.—J. P. Schneider,
189-191 Jefferson Avenue.
CLEVELAND, OHIO—Price Brothers
Carriage Co., 112-118 Prospect St.

CHICAGO, ILL.—A. C. Banker, 17 Plac
mouth Place.
PASADENA, CAL.—John Gibbs Lovell.
BUFFALO, N. Y.—Ellicott Evans, 84
White Building.
BOSTON, MASS.—F. F. Randall, Agent
for New England, 245 Columbus Ave.
TORONTO, ONT.—Canada Cycle &
Motor Co., 81 King St.
TOLEDO, OHIO—Wilson & Co., 811
Jefferson Avenue.

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COMBINATION WAGON AND 4-PAS-
SENGER BRAKE

Eight in the Line
Most Complete on the Market
A Money-Making Agency

NATIONAL
VEHICLE
COMPANY

1200 E. 22d St.
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Automobile \$195



We have for sale,
immediate deliv-
ery. f.o.b. cars, St.
Louis, six Canda
Quadricycles,
brand new; will
carry two people; a
fine little machine,
easily handled and
speedy. If entire
lot is purchased at
one time, price
\$165 each. These
bargains will not
last long; be quick.
We also have two
first-class St. Louis
machines, made by St. Louis Motor Carriage Co., at \$500 each.
A. L. DYKE, Mfr. and Jobber Auto. Parts and Supplies,
1 No. 2 Locomobile, almost new, \$465. 1402 Pine St., St. Louis, Mo.

"The Rutenber"

Factory: Logansport, Ind.

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COOLED
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UPRIGHT GASOLINE MOTORS

Two and Four Cylinder type. From 8 to 60 h. p. for
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Also AUTOMOBILES of Every Style
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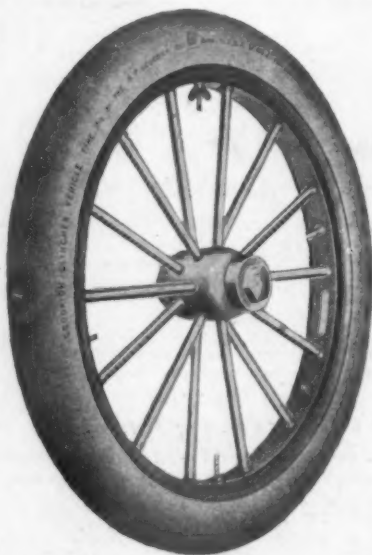
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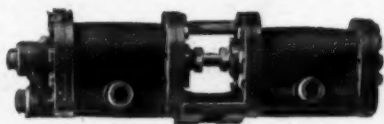
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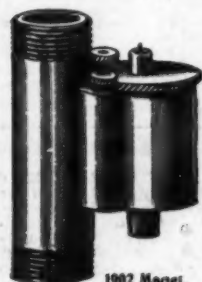
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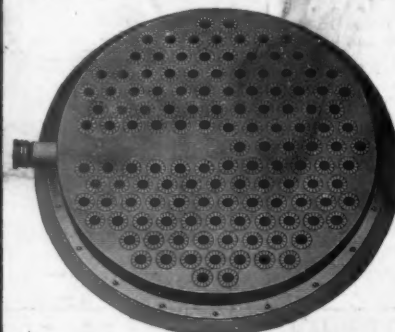
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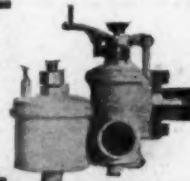
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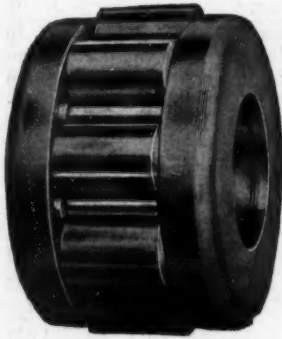
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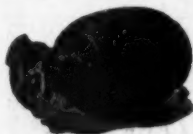


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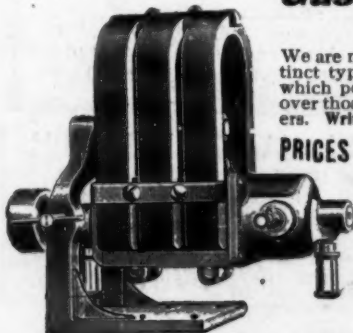
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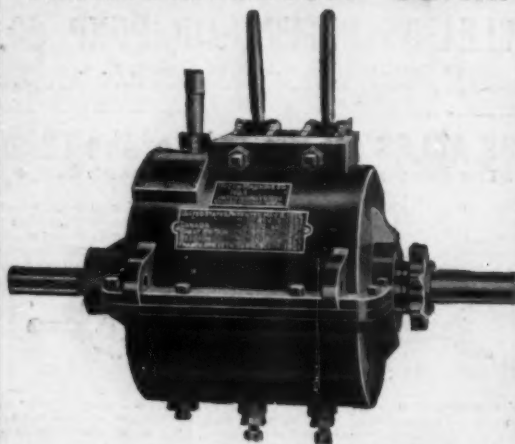
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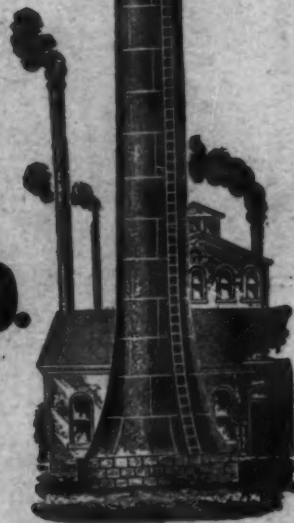


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